RSALOP

Radionuclide Soil Action Levels Oversight Panel

Administrative Support Project
RFCAB 4207-001

General Correspondence

Compiled by:

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Advanced Integrated Management Services, Inc.
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1998/1999

1/164

INFORMAL MEMO

February 10, 2000

TO: Hank Stovall, Mary Harlow, John Till

FROM: Jeremy Karpatkin

RE: DOE Information needs on RAC Report

Attached is a list of items and documents, developed by Site technical staff, that we consider necessary to fully understand, review and reproduce the results of the RAC study.

Some of these have been requested previously, but I wanted to provide you all with a complete list of the items we believe we need.

I recognize that RAC is currently at the end of its timeline and budget for completion of this project. I also recognize that some of these items may not be readily available without additional time and funding.

For the moment, I am seeking only a preliminary response from RAC as to what would be involved in providing these items to DOE. It is not clear to me whether this conversation between DOE and RAC should take place through the auspices of the RSAL OP or not. DOE has no wish to violate the protocol of the RSAL OP. DOE also has no desire to take an action that can be interpreted as adding scope to the RAC contract. Any further discussions about providing this information to DOE can be handled either directly between DOE and RAC or through the RSAL OP, as you wish.

Please let me know how you would like to proceed. I can be reached at 303-966-8392.

Thank you.

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ADDITIONAL INFORMATION NEEDED FROM RAC

Final Task 3 Report: Inputs and Assumptions - Dated October 1999

A hard copy and electronic copy of the Pu-239 surface soil concentrations used to derive the map in Figure 3 on page 28.

A hard copy and electronic copy of the input distributions used to derive the breathing rate distributions in Figures 6 & 7 on page 42. A hard copy and electronic copy of the output breathing rate distributions in Figures 6 & 7 on page 42.

A hard copy and electronic copy of the input distributions used to derive the soil ingestion rate distribution in Figure 8 on page 45. A hard copy and electronic copy of the output breathing rate distribution in Figure 8 on page 45.

Draft Task 5 Report: Independent Calculation - Dated November 1999

A hard copy and electronic copy of the modified RESRAD code with documentation and an explanation of all the modifications performed to the code. All explanations need to be cross-referenced to the place in the code where the modifications were performed.

For each of the RSAL distributions in Figures 8-1, 8-2, 8-3, 8-4, 8-5, 8-6, 8-7, 8-8, 8-9, 8-10, 8-11, 8-12, 8-13, 8-14 and 8-15 the following information is needed.

- A hard copy and electronic copy of the PERL scripts.
- A hard copy and electronic copy of all the input parameter distributions used for each exposure scenario.
- A hard copy and electronic copy of the "SAL empirical distribution file" per Figure 6-1 which is the RESRAD output.
- A hard copy and electronic copy of the "Correlated set of soil concentrations for all nuclides" per Figure 6-1.
- A hard copy and electronic copy of the "Sum-of-ratios empirical distribution file" per Figure 6-1.
- A hard copy and electronic copy of the "Probability of exceeding dose limit = fraction of sum-of-ratios > 1" per Figure 6-1.

The above information is also needed for the RSAL distribution for uranium from the open space exposure scenario, the office worker exposure scenario, the infant of rancher exposure scenario and the current site industrial worker which were not included in the text.

A hardcopy and electronic copy of the model that RAC programmed in C to do their dispersion modeling.

A hardcopy and electronic copy of the source input file (files) used to perform the air modeling of fugitive sources.

A hardcopy and electronic copy of the receptor grid used for the air modeling.

A hardcopy and electronic copy of the data set and reduced input file of meteorological data used for the air modeling.

Documentation of how the p-value was obtained (as referenced in section 5.2.3)

Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

NOV 12 1998

98-DOE-03440

Mary Harlow, City of Westminster
Hank Stovall, City of Broomfield
Co-Chairs
Soil Action Level Oversight Panel
c/o Rocky Flats Citizens Advisory Board
9035 Wadsworth Blvd., #2250
Westminster, CO 80021

Dear Mary and Hank:

I am writing to raise to your attention some issues that emerged at the October 8, 1998, Radionuclide Soil Action Level Oversight Panel (RSAL OP) meeting.

The first issue concerns a statement made by a member of the Risk Assessment Corporation (RAC) team during their demonstration of the Residual Radioactivity (RESRAD) computer model. The RAC team member stated that he did not know the basis on which DOE and the regulatory agencies developed the input parameters used in the RESRAD model. My concern is that RAC has not yet approached the agencies to determine how, in fact, the original parameters were established. Further, RAC's proposal to the RSAL OP, contains no specific milestone or deliverable for getting a specific, in-depth briefing from the agencies on how the inputs to RESRAD were developed and selected. It seems to me that such an understanding of the development of the RSALS is essential to the kind of scientific review the RSAL OP and RAC are engaged in. In addition, RAC's statement insinuates that they believe the parameters lack scientific merit, when in fact the RAC has simply not yet informed itself of the basis for the parameters.

Obviously, the RAC is no way prevented from being critical of how the parameters were selected and developed. (Indeed, that is the whole point of this review.) But I am concerned that at this point there is no specific path forward for RAC to get thoroughly briefed on the basis of the development of the RSALs. Therefore, I would like to request that RAC schedule a time to be briefed by the technical staff of the agencies on how the RSALs were developed. Obviously, we can coordinate with RAC on the timing, duration and specific scope of this brief. Also, any members of the RSAL OP are welcome to attend such a brief, and any part of this briefing can be shared at a regular or special meeting of the full RSAL OP. Please let me know how you would like me to proceed in setting up this meeting with RAC.

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Another issue that emerged at the October 8, 1998, meeting is the method by which RAC will analyze the input parameters and values in the RESRAD model used in developing the RSALs. At numerous points in the Request For Proposal (RFP), and in RAC's proposal to the RSAL OP, the independence of the RAC review and the scientific basis for the review is emphasized. Under Section IV, Project Description and Scope, paragraph A, of the RFP to review the Radionuclide soil action levels at Rocky Flats, states "The contractor will provide the Oversight Panel with a set of recommendations." In addition, Paragraph 5, under Section B. Scope of Work, is to provide an Independent Calculation, "Using the methodology recommended in 4. above, select/combine the inputs identified in 3. above, as well as any new inputs required by the model recommended in 2. above in that model to calculate contamination levels for the dose limits...." RAC's proposal to the RSAL OP specifically states in Section 3, subsection (d), (Page 26) for each input and parameter RAC will develop a value that it considers "reasonable" or "best estimate.".

I review this background because the presentation by John Till on October 8, 1998, suggests that RAC may be intending to go in a significantly different direction. One of John Till's presentation slides from the October 8th meeting states that "Early decisions must be made with regard to key elements of the analysis..." then another slide states "...to provide the Oversight Panel with the tools to make these decisions." My impression from Till's presentation is that RAC will make decisions based upon direct input (i.e., specific RESAD parameter values) from the RSAL OP, and not independently, as directed by the RFP and as described in the RAC proposal. I understand you and Mr. Till have discussed this issue in separate telephone conversations with Dave Shelton of Kaiser-Hill. I would appreciate clarification from you as to the intent of these statements and the intentions of the RSAL OP in writing to close out this issue for the record.

Thank you very much for your time and effort on this project. I look forward to continuing to work with you to ensure that this review remains independent, scientific and with broad public and agency credibility.

Sincerely,

Russell McCallister

Russell McCallister
Regulatory Liaison Group

cc:
Joe Legare, AMEC, DOE
Jeremy Karpatkin, OOC, DOE
Dave Shelton, K-H

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November 20, 1998

Russell McCallister, Regulatory Liaison Group
U. S. Department of Energy - Rocky Flats Field Office
PO Box 928
Golden, CO 80402

RE: YOUR NOVEMBER 12, 1998 LETTER #98-DOE-03440

Dear Russell:

Thank you for your letter dated November 12, 1998 wherein you discuss your concerns regarding approaches to the contract between the Rocky Flats Soil Action Levels Oversight Panel and *Risk Assessment Corporation (RAC).*

The very foundation of our evaluation will be based on a thorough understanding of how the input parameters were developed for the RESRAD model. Since the contract with RAC was finalized and signed just prior to the October 8 meeting, *RAC* team members, of course, had not had an opportunity to begin that review. However, that effort is now underway. *RAC* is taking the approach that the RSALs previously calculated are thoroughly and accurately documented, and *RAC* has begun a methodical review of that documentation. This review, combined with a thorough investigation of all references on the project, should provide *RAC* with a clear understanding of RESRAD development. However, if *RAC* should have questions or require further clarification, we will work with them to schedule a time for in-depth briefings. It is important to remember that the point of the investigation is not to be critical of those initial parameters, but instead to develop a clear understanding of their development and the resulting recommendations. After reviewing RESRAD and any other existing models or methodologies for other sites similar to REFETS, *RAC* will then take a stochastic approach to its recommendations to more clearly reflect uncertainties by providing a range of findings and/or recommendations. This approach was discussed in detail at the November 12 RFSALOP meeting.

A key strength of this project is the relationship between the RFSALOP and *Risk Assessment Corporation.* Members of the panel were carefully selected to assure that a diverse group of individuals would work together to diligently represent the publics surrounding RFETS. With full realization of the serious nature of its work, the Panel is committed to directing and safeguarding the independence of *RAC's* work to assure a credible outcome. The Panel has requested monthly briefings from *RAC* representatives as it moves through each of the tasks and has taken the additional step of scheduling additional technical briefings, on an as-needed basis, to assure that all aspects of the study are thoroughly understood. Based upon that clear understanding of the study's technical intricacies, the Panel will then represent their individual communities and constituencies in developing project scenarios and input parameters for further evaluation by *RAC* representatives. These meetings provide an excellent opportunity to ask questions directly to the *RAC* team or to the Panel.

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The bottom line, however, remains: the primary goal of this project is to calculate an independent set of RSALs that may be used to safeguard the communities surrounding RFETS into the future.

We appreciate the opportunity to respond to your concerns. You will note that we have also copied both Jessie Roberson and Jeremy Karpatkin on our response. In an attempt to keep all key entities informed of project activity, we would appreciate that any correspondence directed to the Panel be sent directly to the Co-Chairs at our business address and copied to both Ms. Roberson and Mr. Karpatkin. Thank you for your input and participation in our meetings; if we can provide any further clarification, please don't hesitate to contact us.

Sincerely,

Original Signed By
Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Original Signed By
Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:
U.S. Department of Energy
Jessie Roberson
Jeremy Karpatkin

RFSALOP Members
Dr. John E. Till, *Risk Assessment Corporation*

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Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

DEC 10 1998

98-DOE-07973

The Honorable Hank Stovall
City of Broomfield
One DesCombes Drive
Broomfield, CO 80020-2495

Dear Councilman Stovall:

Now that the Risk Assessment Corporation (RAC) is well into its review of the Radionuclide Soil Action Levels (RSAL), I wanted to write to discuss how to facilitate ongoing communications between the Department of Energy (DOE), the RSAL Oversight Panel (OP) and the RAC. The DOE does not intend to intervene in the ongoing process of the RSAL review until such time as the RAC is prepared to share its results. We will provide whatever technical resources and support the RSAL OP or the RAC may need, and we will have the relevant staff present at the RSAL OP meetings.

The DOE also needs to be able to respond to the final results of the RSAL review in an informed manner as quickly as possible after your work is completed, and would like to be able to follow closely the work of the RAC as it proceeds. Towards this end, DOE and Kaiser Hill have directed Site technical staff to attend RSAL OP meetings, to make sure that they understand step by step how and why the RAC has conducted its analysis and reached its conclusions. To reach this understanding Site technical staff will likely have additional questions or need clarifications on various technical points.

I am forwarding to you the enclosed list of technical questions developed by Site technical staff from the November 12 RSAL OP meeting. At this meeting, the RSAL OP decided that communications to the RAC from the agencies (and from other external entities) should be directed in writing to the RSAL OP co-chairs, who would then refer them to the RAC. The RSAL OP also said that the RAC would be available prior to public meetings to address technical issues. Site technical staff will come to the meeting on December 10, and to subsequent meetings, to speak directly to the people from RAC to try to get their technical questions addressed face-to-face. Also, Site technical staff will feel free to pose technical questions at the public RSAL OP meetings, with the understanding that they will not dominate these sessions.

Thank you very much for your work on this issue. Please do not hesitate to let me know how we can improve communications.

Sincerely,

Jeremy Karpatkin, Director
Office of Communications

Enclosure

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DEC 10 1998

cc w/Enc:
Jessie Roberson, OOM, DOE
Joe Legare, AMEC, DOE
Russ McCalliser, RLG, DOE
Dave Shelton, Kaiser-Hill
Rick Roberts, Kaiser-Hill
John Corsi, Kaiser-Hill

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TECHNICAL QUESTIONS ON RAC UNCERTAINTY ANALYSIS

In listening to the Risk Assessment Corporation (RAC) presentation on November 12 and reading the RAC proposal for reviewing the Radionuclide Soil Action Levels (RSAL), a number of questions present themselves. These questions are:

1. The parameters of 1) Breathing rate, 2) Soil ingestion rate, 3) Fraction of time spent indoors (And Fraction of time spent outdoors?), 4) Gamma shielding factor and 5) Inhalation shielding factor are not being assessed as distributions in the uncertainty analysis. Please explain why RAC is assuming fixed rates for these parameters and not being assessed as distributions since these are sensitive parameters significantly affecting the radiation dose.
2. The uncertainty in the internal/external Dose Conversion Factors (DCF) is going to be assessed by RAC. These DCFs are promulgated for use by the International Commission on Radiological Protection and the National Council on Radiation Protection and Measurement as fixed values. These fixed DCFs have been adopted for use by the Department of Energy (DOE), Nuclear Regulatory Commission and the Environmental Protection Agency (EPA). How is RAC going to address the international consensus on DCFs. How will the uncertainty in the DCFs be quantified?
3. RAC is proposing to use actual soil concentrations and evaluate the uncertainty in the "Sum of Ratios" method for a given site. The RSALs were derived without the use of actual soil concentrations so they could be applied to a number of sites with varying soil concentrations and ratios. What soil concentrations does RAC believe are applicable to their study? How will the uncertainty in the "Sum of Ratios" method be compared with the current RSALs?
4. Due to the public concern over the appropriate model(s) that could be used to calculate radionuclide contamination levels in soils based on a given dose rate, the Rocky Flats Soil Action Level Oversight Panel specifically requested that the independent reviewer provide a description of available models and a recommendation for the most appropriate model(s) which could be used to calculate radionuclide contamination levels in soils based on a given dose rate. Will RAC be describing and evaluating available models and recommending the most appropriate for use at Rocky Flats? Why is a review of environmental transport models more important than understanding specific applicable computer models? Which environmental transport models need to be assessed?
5. The RAC proposal says that RAC is going to develop a computer interface with the RESRAD code that will perform an uncertainty analysis using RESRAD. Will this newly developed computer interface be independently verified and validated?
6. EPA issued "Guiding Principles for Monte Carlo Analysis" in March 1997 (EPA/630/R-97/001) for use as guidance when performing an uncertainty analysis like the one being performed by RAC. Will RAC be following the guidelines in this document?
7. The shape of the parameter distributions is a key concept in uncertainty analysis since this will directly affect the output distribution. Is RAC going to develop a methodology for choosing the shape of these distributions? EPA's "Development of Statistical Distributions for Exposure Factors" dated March 18, 1998 from the Research Triangle Institute is a methodology that may be applicable.

January 18, 1999

Jeremy Karpatkin, Director
Office of Communications
U. S. Department of Energy - Rocky Flats Field Office
PO Box 928
Golden, CO 80402

RE: YOUR DECEMBER 10, 1998 LETTER #98-DOE-07973

Dear Jeremy:

Thank you for your letter dated December 10, 1998 wherein you discuss how we can work together to facilitate ongoing communications between the Department of Energy, the RFSALOP, and Risk Assessment Corporation (RAC). We appreciate your thoughts on this topic and will work with you to facilitate a clear understanding of the ongoing study and its recommendations.

Your letter also included a list of technical questions developed by Site technical staff from the November 12, 1998 RFSALOP meeting. Initial verbal responses were provided by Dr. John Till, RAC, at the December 10 RFSALOP meeting, with his commitment to a follow-up with more detailed written information. Enclosed is a letter from Dr. Till to Ken Korkia transmitting written responses from the RAC team to the seven questions posed by the Site technical staff. We trust that this information sufficiently addresses the queries; however, if you should require additional detail, please let us know.

Thank you for your input and participation in our meetings; we look forward to working with you throughout the ongoing study.

Sincerely,

Original Signed By
Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Original Signed By
Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:
U.S. Department of Energy
Jessie Roberson

Radiological Assessments Corporation
"Setting the standard in environmental health"

417 Till Road
Neeses, South Carolina 29107
803-536-4883
FAX 803-534-1995

December 19, 1998

Ken Korkia
Rocky Flats Citizens Advisory Board
9035 Wadsworth Parkway, Suite 2250
Westminster, Colorado 80021

Re: Responses to letter from Mr. Jeremy Karpatkin of the DOE Field Office to Hank Stovall, Co-chair of the RSALs Oversight Panel

Dear Mr. Korkia:

Attached to this letter are our responses to the letter from Mr. Jeremy Karpatkin of december 10, 1998. Please forward these responses to the Oversight Panel for their use in preparing a response to the department of energy.

Although I did provide an oral response to the questions, this written response should be considered official, and includes additional consideration from *RAC* regarding the questions asked.

Sincerely,

John E. Till, Ph.D.
President

enclosure

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Responses from *RISK ASSESSMENT CORPORATION (RAC)*
To a letter from Jeremy Karpatkin of the DOE Field Office to Hank Stovall, Co-chair of the RSALs Oversight Panel

Questions asked in the letter are repeated below, followed by a response from *RAC*

1. The parameters of 1) Breathing rate, 2) Soil ingestion rate, 3) Fraction of time spent indoors (And Fraction of time spent outdoors?), 4) Gamma shielding factor and 5) Inhalation shielding factor are not being assessed as distributions in the uncertainty analysis. Please explain why *RAC* is assuming fixed rates for these parameters and not being assessed as distributions since these are sensitive parameters significantly affecting the radiation dose.

Answer. The parameters mentioned are associated with the exposure scenarios. *RAC* recommends that the exposure scenarios for a prospective assessment for radiation dose limitation be treated as standards, and not as simulations of real individuals. We would like to derive the probability that these dose limitation standards will (or will not) be met, and we would like for that probability to represent uncertainty about present and future environmental states and behavior. It is difficult to interpret the probability that a standard will be met when the standard itself is considered uncertain. We are recommending that the scenarios be developed with full consideration of the uncertainty distributions mentioned in the question and of any others that are relevant. But in arriving at the version of the scenario that expresses the standard, we advocate using high (or low, as the case may be) percentiles of the distributions as needed to extend protection to atypical people who *might* come into contact with the site. Thus, for example, one might use a 95th percentile for a scenario subject's average breathing rate. However, we recommend that this procedure be constrained to include only the possible; for example, an individual breathing 24 hours per day at the maximum rate for an Olympic athlete during a strenuous performance is not credible and should not be used to establish an average breathing rate. The fixed values of the scenario parameters should be derived from such considerations. We will be exhibiting sample sets of scenarios and discussing their derivation.

2. The uncertainty in the internal/external Dose Conversion Factors (DCF) is going to be assessed by *RAC*. These DCFs are promulgated for use by the International Commission on Radiological Protection and the National Council on Radiation Protection and Measurements as fixed values. These fixed DCFs have been adopted for use by the Department of Energy (DOE), Nuclear Regulatory Commission and the Environmental Protection Agency (EPA). How is *RAC* going to address the international consensus on DCFs. [sic] How will the uncertainty in the DCFs be quantified?

Answer. If the regulatory interpretation of the DCFs is acceptable to all parties as the standard for dose and risk in deriving the soil action levels, then *RAC* has no quarrel with that interpretation. However, questions have been raised about the reliability of some internal DCFs as representations of energy absorbed per unit intake of the corresponding radionuclides and therefore as measures of risk per unit intake. *RAC* developed considerable information on this topic for plutonium in the Rocky Flats Dose Reconstruction, and it would seem appropriate to share this information and examine its possible implications for the questions that this project seeks to answer.

3. *RAC* is proposing to use actual soil concentrations and evaluate the uncertainty in the "Sum of Ratios" method for a given site. The RSALs were derived without the use of actual soil concentrations so they could be applied to a number of sites with varying soil concentrations and ratios. What soil concentrations does *RAC* believe are applicable to their study? How will the uncertainty in the "Sum of Ratios" method be compared with the current RSALs?

Answer. This question is based on a possible misinterpretation. Soil action levels, by their definition, are independent of radionuclide levels in the soil. *RAC* never intended to suggest that their derivation would depend on particular values for the radionuclide concentrations. When a sum of ratios is formed, however, it combines hypothesized or measured radionuclide concentrations in the soil with the soil action levels to obtain a value that is compared with 1. Thus, the sum of ratios does depend on particular radionuclide concentrations and will reflect uncertainties in both the radionuclide concentrations and in the soil action levels. *RAC* has reservations about the general applicability among sites of particular sets of soil action levels. Soil action levels depend not only on environmental pathway models that are appropriate for the site under study, but also on exposure scenarios that express the potential for people to receive dose from the site. The pathways and the scenarios are inextricably linked, and it is important that for any specific site, everyone is persuaded that the scenarios and pathways considered lead to soil action levels that will assure dose limitation for anyone whose contact with the site can reasonably be foreseen.

4. Due to the public concern over the appropriate model(s) that could be used to calculate radionuclide contamination levels in soils based on a given dose rate, the Rocky Flats Soil Action Level Oversight Panel specifically requested that the independent reviewer provide a description of available models and a recommendation for the most appropriate model(s) which could be used to calculate radionuclide contamination levels in soils based on a given dose rate. Will *RAC* be describing and evaluating available models and recommending the most appropriate for use at Rocky Flats? Why is a review of environmental transport models more important than understanding specific applicable computer models? Which environmental transport models need to be assessed?

Answer. *RAC* must follow its proposal and contract. The proposal accepted the required review of applicable computer programs specified by the RFP, and *RAC* will review programs that it judges to be the leading candidates for applicability to this problem. The framers of the RFP would have to answer the second question regarding their decision to take this particular approach. The programs under review will be listed in the Task 2 report, and their identities will probably be disclosed before that time at a meeting of the Oversight Panel.

5. The *RAC* proposal says that *RAC* is going to develop a computer interface with the RESRAD code that will perform an uncertainty analysis using RESRAD. Will this newly developed computer interface be independently verified and validated?

Answer. To the extent that *RAC* develops scripting interfaces to RESRAD and other programs to carry out uncertainty calculations, the code for such interfaces will be turned over to the Oversight Panel at the end of the project. *RAC* would consider their purpose to be for demonstration of the methods *RAC* is proposing. Beyond that, if the Oversight Panel and the agencies choose to pursue the methods, we assume they would want to seek independent verification or possibly to develop the approaches further. Validation is a different question. We expect to relate recommended transport models to Rocky Flats environmental data at some baseline level, to the extent possible, and thus one would say that the models incorporated in the methodology for which this exercise could be carried out had undergone site-specific validation.

6. EPA issued "Guiding Principles for Monte Carlo Analysis" in March 1997 (EPA/630/R-97/001) for use as guidance when performing an uncertainty analysis like the one being performed by *RAC*. Will *RAC* be following the guidelines in this document?

Answer. *RAC* is familiar with this document. Its guidelines are similar to the ones *RAC* generally follows, and they will be considered and followed where appropriate in this work. *RAC* also has considerable experience in developing uncertainty analytic methods for nonroutine situations.

The methods used will presumably be subject to peer review.

7. The shape of the parameter distributions is a key concept in uncertainty analysis since this will directly affect the output distribution. Is *RAC* going to develop a methodology for choosing the shape of these distributions? EPA's "Development of Statistical Distributions for Exposure Factors" dated March 18, 1998 from the Research Triangle Institute is a methodology that may be applicable.

Answer. Choosing the form of parameter distributions is a complicated question, and the methods can range from nonlinear parameter estimation methods to eliciting a consensus of judgment by a panel of experts. Of fundamental importance is that interested parties accept that the choices are reasonable. *RAC*'s principles of uncertainty analysis were summarized in the proposal. We searched the EPA web sites for the document mentioned in the question and found no document with a similar title. If the poser of the question could provide more information (such as a report number and author list) or a copy of the document, we would be glad to examine it to see whether it might contribute new information.

Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

FEB 18 1999

99-DOE-07780

Ms. Mary Harlow
City of Westminster
4800 West 92nd Avenue
Westminster, CO 80030

Dear ~~Ms. Harlow:~~ Mickey,

Enclosed are technical questions developed by Rocky Flats Field Office and Kaiser-Hill technical staff from the January 14 Radionuclide Soil Action Level Oversight Panel meeting. As usual, Site technical staff will try to meet with RAC prior to the February 11 meeting to discuss these questions informally.

Once again, thank you for all your efforts on behalf of a safer, better cleanup of Rocky Flats.

Sincerely,

Jeremy Karpatkin, Director
Closure Project Communications

Enclosure

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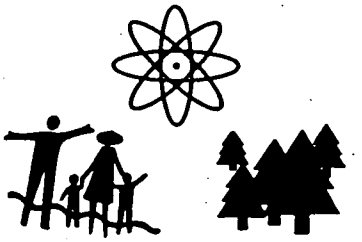
DRAFT
TECHNICAL QUESTIONS ON RAC PRESENTATION ON JANUARY 14

1. The agencies in formulating the RSALs relied on the land use assumptions of the Rocky Flats Cleanup Agreement: the onsite office worker and open space user. These in turn were based on consensus community recommendations contained in the Future Site Use Working Group report and in CAB recommendations. As a basis for comparison, the agencies compared these scenarios to one of institutional control breakdown, defined as a residential scenario. At the January 14 RSAL OP meeting, the RAC briefed the RSAL OP on some potential exposure scenarios that RAC will analyze in the coming months. While realizing that these are not necessarily the final scenarios that will be chosen by the RAC, the initial scenarios do raise some questions. Please explain the methodology for choosing the use of the resident rancher, infant of resident rancher and child of resident rancher exposure scenarios. Why was a resident rancher chosen for assessment given the urban nature of the areas encroaching on Rocky Flats? Are these scenarios intended to be scenarios of institutional control breakdown or of reasonably anticipated future land uses? Does RAC believe that these scenarios more accurately capture institutional control failure than the scenarios analyzed by the agencies? If so, why? Does RAC believe the agencies erred in their determination of the reasonably anticipated future land use? Or does the RAC believe that clean up standards should not be based on reasonably anticipated land uses? If it is the latter, please explain what the basis for clean up should be other than reasonably anticipated land uses?
2. RAC has developed exposure parameter (i.e., breathing rate, soil ingestion rate, etc.) values to be used with their chosen exposure scenarios. RAC presented graphs on potential ranges for the breathing rate exposure parameter based on three studies. Given the range of studies available on this topic, including the studies surveyed in a 1997 EPA Handbook (see below) why did RAC choose these three studies? How did RAC choose a specific breathing rate from the range of values given in these three studies? What methodology was used to decide that these breathing rates were most appropriate to use at Rocky Flats? EPA's OSWER Directive 9285.6-03, "Human Health Evaluation Manual, Supplemental Guidance: 'Standard Default Exposure Factors'," dated 3/25/91, and in EPA's Exposure Factors Handbook (EPA/600/P-95/002F), dated August 1997, are considered by the Site to be authoritative studies in these areas. Can RAC explain why it chose not to reference these studies in developing exposure parameters?

RSALOP

Radionuclide Soil Action Level Oversight Panel



March 9, 1999

Jeremy Karpatkin, Director
Office of Communications
U. S. Department of Energy - Rocky Flats Field Office
PO Box 928
Golden, CO 80402

RE: YOUR FEBRUARY 8, 1999 LETTER #99-DOE-07780

Dear Jeremy:

Thank you for your letter dated February 8, 1999 transmitting questions regarding scenario selection and inhalation rates that were presented by *Risk Assessment Corporation (RAC)* at the January 14 Radionuclide Soil Action Levels Panel (RSALOP) meeting.

Dr. Kathleen Meyer provided a brief response to these questions at the February 11, 1999 meeting; however, we are enclosing a detailed written response for distribution to DOE-RFFO and Kaiser Hill technical staff. We will provide copies of the enclosure at the RSALOP meeting scheduled for March 11 to assure that all Panel members have an opportunity to review your concerns and the follow-up provided by *RAC* representatives. We trust that this information sufficiently addresses the queries; however, if you should require additional detail, please let us know.

The study continues to move along as scheduled, and we are rapidly approaching an important milestone: the first of three planned public meetings. We cordially invite you to attend the meeting scheduled from 6:30 - 9:00 p.m. Wednesday, March 10, at the Westminster City Hall. The meeting will open with a 30-minute open house to provide attendees an opportunity to visit with Panel members and review and discuss a series of storyboards designed to explain the basics of the project. We are enclosing an agenda and hope to see you there.

As usual, we appreciate your input and participation in our meetings; we look forward to working with you throughout the ongoing study.

Sincerely,

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:
U.S. Department of Energy
Jessie Roberson

RSALOP Members

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Risk Assessment Corporation
417 Till Road, Neeses, South Carolina 29107
phone 803.536.4883 fax 803.534.1995
www.racteam.com

February 24, 1999

Ken Korkia
Rocky Flats Citizens Advisory Board
9035 Wadsworth Parkway, Suite 2250
Westminster, Colorado 80021

Re: Responses to letter from Mr. Jeremy Karpatkin of the DOE Field Office to Mary Harlow, Co-chair of the RSALs Oversight Panel

Dear Mr. Korkia:

Attached to this letter are our responses to the letter from Mr. Jeremy Karpatkin of February 8, 1999. Please forward these responses to the Oversight Panel for their use in preparing a response to the Department of Energy.

Although we did provide an oral response to the questions at the February 1999 meeting, this written response should be considered official, and includes additional consideration from *RAC* regarding the questions posed.

Sincerely,

Kathleen R. Meyer, Ph.D.
For John E. Till

enclsoure

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Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

MAR - 4 1999

99-DOE-07789

The Honorable Hank Stovall
City of Broomfield
One DesCombes Drive
Broomfield, CO 80020-2495

Dear ~~Councilman Stovall~~ Hank,

Enclosed are questions and comments from the Rocky Flats Environmental Technology Site (Site) technical staff in response to the February 11 meeting of the Radionuclide Soil Action Levels Oversight Panel. As you can see, the comments enclosed address both the Task 1 Report and other items raised at the meeting.

The Site technical staff will plan to attend the technical session with RAC prior to the March 11 meeting.

Thank you again for all of your work on this effort.

Sincerely,

Jeremy Karpatkin, Director
Closure Project Communications

Enclosure

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Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

MAR - 4 1999

99-DOE-07789

Ms. Mary Harlow
City of Westminster
4800 West 92nd Avenue
Westminster, CO 80030

Dear ~~Ms. Harlow~~ Mickey,

Enclosed are questions and comments from the Rocky Flats Environmental Technology Site (Site) technical staff in response to the February 11 meeting of the Radionuclide Soil Action Levels Oversight Panel. As you can see, the comments enclosed address both the Task 1 Report and other items raised at the meeting.

The Site technical staff will plan to attend the technical session with RAC prior to the March 11 meeting.

Thank you again for all of your work on this effort.

Sincerely,

Jeremy Karpatkin, Director
Closure Project Communications

Enclosure

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Draft Technical Comments/Questions on
Draft Report: Task 1: Cleanup Levels at Other Sites
RAC Presentation, February 11, 1999

1. During the 1998 Rocky Flats Cleanup Agreement (RFCA) Annual Review of the Radionuclide Soil Action Levels, an agency working group reviewed radionuclide soil cleanup levels developed for Hanford and the Nevada Test Site and compared those soil cleanup levels and the methodologies used for the calculations to the RSALs developed for Rocky Flats. The working group reviewed the same documents used by RAC for Task 1: Cleanup Levels at Other Sites, for the Nevada Test Site and Hanford, but in more detail than presented in the Draft Report for Task 1: Cleanup Levels at Other Sites (Draft Report). The Department of Energy (DOE) has attached to this letter a copy of the working group's summary of the comparison for your information. There may be information in this report useful to the RAC as it completes Task 1.

2. The Draft Report claimed "the hypothetical future resident 85 mrem/year action level is the DOE recommended action level below which no remediation would be required . . . " This is not an accurate statement regarding the action levels used at RFETS. It is more accurate to state that an action level based on a 15 mrem/year dose level to a hypothetical future resident is the recommended contamination level below which no remediation would be required, assuming there is no impact to surface water. Further, the 85 mrem/year residential scenario was NOT used in RFCA to support a residential use scenario. The 85mrem/year residential scenario was used to support an Open Space use scenario. This is because the draft EPA rule on which the RFCA Parties relied directed comparing 15mre/year for the anticipated use to 85mrem/year for residential use and choosing the more conservative of the two scenarios. In this case, 85mrem/year residential was more conservative than 15mrem/year open space. While we recognize that this explanation does not change the arithmetic conclusion of the draft report, we did wish to make this clarification.

3. The Draft Report states that "two parameters at RFETS emerged from the sensitivity analysis as most important and most sensitive to change: mass loading factor and the dose conversion factor." DOE agrees that these are two sensitive parameters; however, DOE also believes that there are other parameters that are sensitive and could significantly impact the final derivation of RSALs. The RAC may not have identified or considered these additional parameters. In order for DOE to evaluate the sensitivity analysis conducted by RAC, DOE requests that RAC provide a more detailed summary of the sensitivity analysis, including the methods and results of the sensitivity analysis, conducted by RAC.

4. The Rocky Flats Vision (part of the Rocky Flats Clean Up Agreement) states that Rocky Flats will be cleaned up to allow open space uses in the Buffer Zone, restricted open space or industrial use for most of the Industrial Area, and other appropriate uses. As of the February 11, 1999, Rocky Flats Soil Action Levels Oversight Panel meeting, RAC is currently considering a residential scenario and a current onsite worker scenario. Do the RAC and the Oversight Panel also plan to evaluate land uses consistent with the assumptions of the RFCA?

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1998 Rocky Flats Cleanup Agreement (RFCA)
Annual Review
Radionuclide Soil Action Levels (RSAL) Review Summary

The RFCA was signed by the DOE, EPA and CDPHE on July 19, 1996. The RFCA Parties have committed to annually reviewing the agreement to determine if any revisions are necessary. In addition to the annual review prescribed in RFCA Paragraph 5, the agencies committed to conducting an internal annual review of the RSALs.

A working group composed of members from the EPA, CDPHE, DOE, and the Kaiser-Hill Team was convened to review any new information concerning the RSALs in compliance with RFCA requirements. This RSAL Working Group (RWG) identified and reviewed eleven new or revised statutes, regulations, written policy and/or guidance that may impact the RSALs. This year's review focused on four primary areas: (1) regulatory basis for setting RSALs; (2) computer models; (3) exposure parameters; and (4) input parameters at other DOE Sites. This summary provides a general overview of what was reviewed in each area.

Although some of the information gathered in this review will ultimately impact the RSALs, the Working Group recommended that it was not appropriate to recalculate the RSALs at this time. The RFCA Project Coordinators agreed with the recommendation for the following reasons:

- The regulatory basis of the RSALs needs to be analyzed once the NRC draft guidance on "Demonstrating Compliance with the Radiological Criteria for License Termination (LICTERM)" is finalized;
- The RSAL Oversight Independent Review needs to be completed;
- No major ER projects are planned for FY 99 that will focus on radionuclides;
- The Actinide Migration Study may provide applicable information within the next year;
- More time is required to analyze the cleanup levels at other sites.

The following is a basic description of the major elements of the review.

Regulatory Basis and Computer Model:

The RSALs are currently based on the computer model "RESRAD," Version 5.61. The RESRAD computer code was selected for use in deriving soil action levels because it met all applicable modeling requirements. The RWG recommends that the latest versions of the RESRAD computer code and the DandD computer code be assessed before recalculating RSALs. The DandD computer code is an integral part of the NRCs LICTERM regulatory guide. When the LICTERM regulatory guide is finalized, the RWG recommended that an analysis be performed to see if RESRAD or DandD should be used to recalculate RSALs.

Exposure Parameters:

The RSALs are currently based on the hypothetical residential, office worker, and open space exposure scenarios. All exposure scenarios are still applicable for deriving RSALs. The hypothetical residential exposure scenario is still valid due to the regulatory requirements in EPA's draft 40CFR196, "Radiation Site Cleanup Regulations." The office worker and open space exposure scenarios are still valid under RFCA and the Rocky Flats Vision. The RWG has proposed a number of changes to the exposure parameters

associated with these exposure scenarios. For example, based on new Jefferson County Open Space statistics, the assumed number of future open space visits to Rocky Flats was changed to from 25 to 100 per year. However, the RWG does not recommend that the interim RSALs be recalculated at this time due to the pending regulatory analysis discussed above.

Other Site Cleanup Levels:

The RWG identified the Nevada Test Site (Tonopah Test Range) and the State of Washington (Hanford) as two other sites that had derived interim radionuclide cleanup standards for plutonium, americium and/or uranium using the RESRAD computer code. The RWG did not have the necessary time to analyze these other levels. Over the course of the next year the radionuclide cleanup levels used at these other sites will be reviewed in more detail in order to understand how their standards are derived and to determine if there is any information that may affect the RSALs.

Prior to any changes to action levels or standards in RFCA Attachment 5, the public will have an opportunity to comment on the proposed changes as required in RFCA paragraph 117.

5.0 IGD

A working group comprised of members from the EPA, CDPHE, DOE, Kaiser-Hill, and RMRS was convened to review and update, if necessary, the IGD. The IGD working group updated the document. Once the document is final, it will be released on-site as a controlled document. Stakeholders interested in obtaining a copy of the final IGD should contact either a RFCA Project Coordinator or an Agency community relations representative after September 30, 1998.

6.0 RADIONUCLIDE SOIL ACTION LEVELS

A working group comprised of members from the EPA, CDPHE, DOE, Kaiser-Hill and SSOC was convened to review any new information concerning the RSALs. This RSAL Working Group (RWG) initially identified any new or revised statutes, regulations, written policy and guidance that may impact the RSALs. The RSALs were then reviewed against the requirements within these documents to see if any changes should be made to the RSALs.

In addition to the annual review requirements prescribed in RFCA paragraph 5, the RFCA Parties addressed the four questions discussed in the introduction.

As a result of this annual review, the RWG has identified some new scientific information that may warrant a recalculation of the current RSALs. For example, Jefferson and Boulder Counties have conducted recent surveys on the actual use of open space within their respective counties. The RFCA Parties have evaluated this information and have recommended potential changes to the exposure factors for the open space exposure scenario. In addition, the Actinide Migration Studies (AMS) group is assessing the chemical form of plutonium in the environment at the Site. The outcome of the AMS may provide scientific information that may impact the Interim RSAL. The RFCA Parties expect to have additional information from the AMS by the end of 1998.

An Independent Oversight Review Panel will be independently reviewing the current RSALs starting in Fall 1998. This is anticipated to be an extensive review of the RESRAD model and all the inputs to the model. The RFCA Parties expect to have additional information from the Independent Oversight Review Panel in Spring 1999.

In addition, the RFCA Parties are aware that the NRC promulgated a rule on July 21, 1997, "Radiological Criteria For License Termination." While the rule does not provide a national RSAL, it does provide a basis for determining the extent to which lands and structures must be remediated before decommissioning of a NRC facility is considered complete and the NRC radiological license terminated. The NRC has been preparing extensive guidance on how this rule is to be implemented; however, this guidance has not been finalized in time to be included in this year's review. The RFCA Parties have agreed that the final rule and the accompanying guidance need to be reviewed to determine whether the rule should be applied to the Site, a non-NRC facility; however,

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the RFCA Parties agreed to wait until the guidance was final before undertaking this review.

Consequently, due to the scientific information being gathered by the AMS, the CAB independent review and the new regulatory guidance being issued in the near future, the RFCA Parties have decided that the RSALs will not be revised at this time. If the RFCA Parties agree that the RSALs need to be revised in the future, then this work will be completed; however, prior to any changed RSALs being incorporated into RFCA Attachment 5, the public will have an opportunity to comment on the proposed changes as required in RFCA paragraph 117.

The interim action levels were applied over the course of the year at the Mound Site. Volatile organic compounds, americium, and uranium from the Mound Site contaminate the ground water above Tier II ground water action levels in a localized plume discharging to South Walnut Creek. The source of the ground water contamination at the Mound Site has been removed. A passive reactive barrier system of reactive iron was installed to contain the radionuclides and destroy the VOCs prior to release of the water to South Walnut Creek.

The interim action levels are being applied at Trench 1 (T1). The source removal at T1 was prompted by the presence of depleted uranium that exceeded Tier I RSAL. The contents of the trench will be excavated. Soil below the Tier II RSAL will be returned to the excavation. If radionuclide activity levels are between Tier I and Tier II action levels, these soils will be segregated and stockpiled and either disposed of off-site or returned to the trench within a geotextile fabric. The T1 project team, including the regulatory agencies, will be consulted prior to returning soil above Tier II RSAL, but below Tier I RSAL, to the excavation.

The effectiveness of the reactive barrier for the Mound Site plume and the T1 removal will be verified with monitoring over time. The effectiveness of past remedial actions is still being determined by the groundwater monitoring program.

6.1 Review of Statutes, Regulations, Policy and Guidance

The following statutes, regulations, policy and guidance were reviewed to assess their impact on the RSALs. A more extensive list of statutes, regulations, policy and guidance were reviewed as part of the annual RFCA review. A brief description of each statute, regulation, policy or guidance is given. This part of the review primarily affected the regulatory basis for deriving the RSALs and the basis for the exposure parameters used to calculate the hypothetical residential exposure scenario, office worker exposure scenario and open space exposure scenario.

The RWG recommends retaining the current RSALs derived using EPA's draft 40CFR196, at least temporarily. EPA has withdrawn 40CFR196; however EPA has issued OSWER Directive 9200.4-18, "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination." The radiation dose limits in this OSWER directive are consistent with the radiation dose limits used to derive the current RSALs. With withdrawal of the draft 40CFR196, the RFCA parties need to evaluate the regulatory basis for deriving RSALs. The RFCA parties need to resolve EPA's OSWER guidance calling for a 15 mrem dose standard with NRC's 25 mrem requirement.

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The RWG has identified and recommends that a few assumptions behind the current RSAL exposure parameters may need to be changed in the future. The RWG recommends not recalculating the RSALs at this time due to new regulatory guidance being released in the near future. The anticipated new regulatory guidance is the NRC's final regulatory guide on "Demonstrating Compliance with the Radiological Criteria for License Termination" (LICTERM). When this regulatory guide is released, the NRC's "Radiological Criteria for License Termination," and implementing guidance, will be reviewed for applicability at RFETS.

EPA's draft 40CFR196, "Radiation Site Cleanup Regulations," dated 2/16/96

This regulation sets forth requirements for cleanup levels for sites contaminated with radionuclides and is designed to protect human health and the environment from exposure to ionizing radiation. This regulation is currently followed within the RFCA and provides the framework for the derivation of the current RSALs. EPA has withdrawn this draft regulation; it is not expected to be reissued in the near future.

EPA's OSWER Directive 9200.4-18, "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination," dated 8/22/97

This EPA Directive outlines the radiation risk and radiation dose-based levels that EPA feels are protective of human health. This Directive also states that the radiation dose-based cleanup levels promulgated by the NRC are not protective of human health and supports the radiation dose based limits in EPA's draft 40CFR196. The radiation dose limits in this OSWER directive are consistent with the radiation dose limits used to derive the current RSALs.

EPA's OSWER Directive 9285.6-03, "Human Health Evaluation Manual, Supplemental Guidance: 'Standard Default Exposure Factors'," dated 3/25/91

This EPA Directive outlines EPA default parameters for standard EPA exposure scenarios and exposure pathways. These default parameters are used within the RSALs to the maximum extent possible. Alternative parameters are used in the RSALs when a default parameter from this directive is not available. Because this is EPA's primary document for defining exposure parameters for use in risk assessments at CERCLA sites, this is the primary document used to define exposure parameters for deriving RSALs. This document was used to propose revised residential exposure parameters and office worker exposure parameters except for the office worker inhalation rate (See Table 1).

EPA's "Final Exposure Factors Handbook," (EPA/600/P-95/002Fa,b,c), dated 8/97

This handbook summarizes data on human behaviors and characteristics that affect exposure to environmental contaminants. EPA utilizes this data to recommend, along with site specific data, exposure parameters for use in quantifying radiation dose and radiation risk to an individual at sites across the nation. This document was used to propose a revised inhalation rate for the open space exposure scenario (See Table 1).

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DOE Order 5400.5, "Radiation Protection of the Public and the Environment," dated 1/7/93

This DOE Order establishes standards and requirements for operations at DOE facilities with respect to protection of members of the public and the environment against undue risk from radiation. This Order outlines the methodologies for calculating radiation dose to the public and the environment as well as delineating radiation dose limits. This DOE Order is not used as the basis for deriving RSALs.

DOE's proposed 10CFR834, "Radiation Protection of the Public and the Environment," dated 9/13/95

This DOE regulation would codify the requirements in DOE Order 5400.5. The requirements of DOE Order 5400.5 are largely reiterated in this document. This regulation is not used as the basis for deriving RSALs.

NRC's final 10CFR20, et al., "Radiological Criteria For License Termination," dated 7/21/97

This regulation provides a basis for determining the extent to which lands and structures must be remediated before decommissioning of a NRC facility can be considered complete and the NRC radiological license terminated. This regulation is based on cleaning up a NRC facility to a radiation dose-based standard assessed through all exposure pathways. This regulation is not used as the basis for deriving RSALs.

NRC's draft Regulatory Guide DG-4006, "Demonstrating Compliance with the Radiological Criteria for License Termination," dated 2/17/98

This guide supports the requirements in the NRC's "Radiological Criteria for License Termination." This guide describes acceptable radiation dose modeling methods, an acceptable method to conduct a final radiation status survey, an acceptable method to terminate a license under restricted land use conditions and an acceptable method for performing As Low As Reasonably Achievable (ALARA) analyses. This guide will be the basis for remediating lands and buildings based on radiation dose at NRC facilities. This regulatory guide is expected to be finalized by August of 1998. This regulatory guide is not used as the basis for deriving RSALs.

NRC's draft NUREG-1549, "Using Decision Methods for Dose Assessment to Comply with Radiological Criteria for License Termination."

This NUREG contains an overall framework for dose assessment and decision making for site characterization, dose assessments and remedial actions. The framework is designed to be used throughout the decommissioning and license termination process at NRC facilities. This document will provide guidance on screening level exposure parameters that are acceptable to the NRC. This NUREG is not used as the basis for deriving RSALs.

1996 Jefferson County and 1995 Boulder County Open Space studies

These studies were reviewed to assess the exposure parameters within the open space exposure scenario. These studies assessed the behavioral patterns and characteristics of individuals that use the Jefferson County and Boulder County open space areas. These studies were used to propose revised open space exposure parameters (See Table 2).

ICRP 66, "Human Respiratory Tract Model for Radiological Protection," dated 9/93

This report describes the model used to calculate radiation dose to the respiratory tract of workers resulting from the intake of airborne radionuclides. This report details the anatomy and physiology of the respiratory tract as well as the deposition, clearance and biological effects of inhaled radionuclides. While not new information, the RWG believes it contains pertinent information to the development of the RSALs. This document was used to propose a revised inhalation rate for the office worker exposure scenario (See Table 2).

6.2 Review of Exposure Parameters

The RSALs are currently based on the hypothetical residential, office worker, and open space exposure scenarios. These exposure scenarios are still applicable for deriving RSALs since these land uses are still valid under RFCA and the Rocky Flats Vision. The current and proposed exposure parameters are outlined in Table 1, "Preliminary Draft Exposure parameters for the Radionuclide Soil Action Levels." The RWG does not recommend that the interim RSALs be recalculated at this time due to new current information; however, after evaluation of the NRC rule and guidance, the RWG also recommends the evaluation of the proposed exposure parameters outlined in Table 1. The RWG does not anticipate recommending any changes to the exposure parameters associated with the hypothetical residential exposure scenario due to new current information. The RWG recommends that the "Ingestion of Beef/Dairy Products" exposure pathway be assessed for inclusion into the RSAL calculation when the RSALs are further evaluated. The RWG recommends that the following documents may need to be reviewed and possibly used to assess the Beef/Dairy Products exposure pathway: EPA's Human Health Evaluation Manual, Supplemental Guidance: 'Standard Default Exposure Factor's; EPA's Final Exposure Factors Handbook; EPA's Methodology for Assessing Health Risks Associated with Indirect Exposure to Combustor Emissions; and the NRC's Review of Parameter Data for the NUREG/CR-5512 Residential Farmer Scenario and Probability Distributions for the D and D Parameter Analysis. Current new information may require a change to the exposure parameters associated with the office worker and open space exposure scenarios. All these proposed changes will be assessed during the evaluation of the implementing guidance from NRCs final LICTERM regulatory guide.

6.3 Review Computer Models

The RSALs are currently based on the computer model "RESRAD," Version 5.61. The RESRAD computer code was selected for use in deriving soil action levels because it met all applicable modeling requirements from DOE, EPA and CDPHE. RESRAD was developed at Argonne National Laboratory for the US Department of Energy so that

radiation dose to an individual, as well as action levels, could be derived for radioactive material in soils. RESRAD models all exposure scenarios and exposure pathways in an integrated manner and assesses daughter products over the 1,000 year modeling period. RESRAD is a deterministic computer code that uses discrete values for each exposure parameter for input to the code. RESRAD, Version 5.82 is the latest version of RESRAD. Table 2, "RESRAD Version History," shows the revisions that have been performed on the RESRAD computer code since Version 5.61 with the upgrades performed on each version.

The DandD computer code is a draft computer code being developed by the NRC for use with the final LICTERM regulatory guide. The DandD computer code is being developed in order to derive radionuclide cleanup standards, as well as building release limits, for radionuclides on a screening level or site specific basis. DandD is a probabilistic computer code that uses distributions of exposure parameters for input to the code. DandD will be the primary computer code used by the NRC to assure compliance with their "Radiological Criteria for License Termination."

The RWG recommends that the latest versions of the RESRAD computer code and the DandD computer code be assessed before recalculating RSALs. When the NRCs LICTERM regulatory guide is finalized, an analysis will be performed to see if the RESRAD computer code or the DandD computer code should be used to calculate RSALs at RFETS.

6.4 Review Input Parameters Used at Other Sites

In addition to the regulatory and technical reviews discussed above, the RWG identified two other sites during this review that had derived radionuclide cleanup standards for plutonium, americium and/or uranium using the RESRAD computer code. The Nevada Test Site (Tonopah Test Range) has derived radionuclide cleanup standards and the State of Washington has derived radionuclide cleanup standards for the Hanford site. These radionuclide cleanup standards are documented in the reports Radiological Dose Assessment for Residual Radioactive Material in Soil at the Clean Slate Sites 1, 2 and 3, Tonopah Test Range and in Hanford Guidance For Radiological Cleanup, respectively. Both of these sites assessed a residential exposure scenario and an office/industrial exposure scenario using the RESRAD computer code.

The residential input parameters for the RESRAD computer code from RFETS, the Nevada Test Site (Tonopah Test Range) and the State of Washington are outlined in Table 4, "Preliminary Draft Comparison of Residential RESRAD Input Parameters for the Rocky Flats Environmental Technology Site, Nevada Test Site and Hanford." The office worker/industrial input parameters for the RESRAD computer code from RFETS, the Nevada Test Site (Tonopah Test Range) and the State of Washington are outlined in Table 5, "Preliminary Draft Comparison of Office Worker RESRAD Input Parameters for the Rocky Flats Environmental Technology Site, Nevada Test Site and Hanford."

The RWG has initiated contact with representatives from the States of Nevada and Washington to discuss the differences and similarities between the exposure parameters summarized in Tables 4 and 5. Both sites impacted by these standards are using these standards on an interim basis. While the standards derived for the Nevada Test Site (Tonopah Test Range) have been used to guide cleanup at two areas within

the Tonopah Test Range, these standards are currently under independent review. In addition, the RWG was informed that the Washington document is intended to be used as a guidance document on how to develop site specific radionuclide cleanup standards for Operable Units (OU) at DOE's Hanford Site. Consequently, for a specific Hanford OU, the radionuclide cleanup standard may be recalculated and a different radionuclide cleanup standard than the one in the Washington document may be selected to guide cleanup.

The RWG does not recommend any changes to the RSALs at this time due to the radionuclide cleanup standards currently calculated for these other sites and anticipates that discussions will continue between the three sites into the next year. The radionuclide cleanup standards used at the Nevada Test Site (Tonopah Test Range) and the State of Washington will be reviewed periodically by the RWG in order to understand how these standards were derived and to determine if there is any information that may affect the RSALs.

6.5 RSAL Path Forward

The RFCA Parties have agreed:

- To retain the current RSALs derived using EPA's draft 40CFR196 on a temporary basis;
- To evaluate the regulatory basis for deriving the RSALs;
- To resolve EPA's OSWER guidance calling for a 15 mrem dose standard with NRC's 25 mrem requirement;
- Due to the scientific information being gathered by the AMS, the Independent Oversight Review Panel and the new NRC regulatory guidance being issued in the near future, the RSALs will not be recalculated at this time;
- The latest RESRAD computer code and the DandD computer code need to be assessed for use in recalculating RSALs;
- The final NRC rule and the accompanying guidance need to be reviewed to determine whether the rule should be applied to the Site, a non-NRC facility; however, the RFCA Parties agreed to wait until the guidance was final before undertaking this review;
- The radionuclide cleanup standards from the Nevada Test Site (Tonopah Test Range) and the State of Washington be reviewed periodically in order to understand how these standards are derived and to determine if there is any information that may affect the RSALs.

The following will be considered during the review:

- NRC Final rule, "Radiological Criteria for License Termination"

- NRC Regulatory Guide DG-4006, "Decommissioning Compliance with the Radiological Criteria for License Termination"
- NRC NUREG-1549, "Using Decision Methods for Dose Assessment to Comply with Radiological Criteria for License Termination"
- NRC Letter Report, "Review of Parameter Data for the NUREG/CR-5512 Residential Farmer Scenario and Probability Distributions for the D and D Parameter Analysis"
- NRC NUREG-1575, "Multi-Agency Radiation Survey and Site Investigation Manual" (MARSSIM)

After these evaluations are completed, the RSALs may need to be recalculated. If the RFCA Parties agree, then the RSALs will be recalculated; however, prior to any changed RSALs being incorporated into RFCA Attachment 5, the public will have an opportunity to comment on the proposed changes as required in RFCA paragraph 117.

TABLE 4
COMPARISON OF RESIDENTIAL RESRAD INPUT PARAMETERS FOR THE ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE, NEVADA TEST SITE (TONOPAH TEST RANGE) AND HANFORD

	Parameter	Units	Rocky Flats	Nevada Test Site (Tonopah Test Range)	Hanford
	1-External Gamma		Active	Active	Active
	2-Inhalation		Active	Active	Active
	3-Plant Ingestion		Active	Active	Active
	4-Meat Ingestion		Suppressed	Active	Active
	5-Milk Ingestion		Suppressed	Active	Active
	6-Aquatic Foods		Suppressed	Suppressed	Active
	7-Drinking Water		Suppressed	Active	Active
	8-Soil Ingestion		Active	Active	Active
	9-Radon		Suppressed	Active	Suppressed
R011	Contaminated Zone (CZ)				
	Area of CZ	sq. meters	40,000	248000	10,000
	Thickness of CZ	m	0.15	0.05	4.6
	Length Parallel to Aquifer Flow	m	200	1640	100
	Radiation Dose Limit	mrem/yr	15, 85	100	15
	Elapsed Time of Waste Placement	yr	0	0	0
R013	Cover and Contaminated Zone Hydrological Data				
	Cover Depth	m	0	0	0
	Density of Cover Material	g/cm3	Not Used	Not Used	Not Used
	Cover Erosion Rate	m/yr	Not Used	Not Used	Not Used
	Density of CZ	g/cm3	1.8	1.5	1.6
	CZ Erosion Rate	m/yr	0.0000749	0.000031	0.0001
	CZ Total Porosity		0.3	0.3	0.4
	CZ Effective Porosity		0.1	0.3	0.2
	CZ Hydraulic Conductivity	m/yr	44.5	1000	250
	CZ b Parameter		10.4	4.05	4.05
	Humidity in air	g/cm3	Not Used	Not Used	Not Used
	Evapotranspiration Coefficient		0.253	0.68	0.91
	Precipitation	m\yr	0.381	0.127	0.16
	Irrigation Rate	m\yr	1	1.53	0.76
	Irrigation Mode		Overhead	Ditch	Overhead
	Runoff Coefficient		0.004	0.2	0.2
	Watershed Area for Nearby Stream or Pond	m2	8,280,000	311,000	1,000,000
	Accuracy for Water/Soil Computation		0.001	0.001	0.001
R014	Saturated Zone (SZ) Hydrological Data				
	Density of SZ	g/cm3	1.8	1.5	1.6
	SZ Total Porosity		0.3	0.3	0.4
	SZ Effective Porosity		0.1	0.3	0.2
	SZ Hydraulic Conductivity	m/yr	44.5	1000	5530
	SZ Hydraulic Gradient		0.15	0.0001	0.00125
	SZ b Parameter		Not Used	4.05	4.05
	Water Table Drop Rate	m/yr	0	0.0001	0.001
	Well Pump Intake Depth	m	10	10	4.6
	Nondispersion or Mass Balance		Nondispersion	Nondispersion	Nondispersion
	Well Pumping Rate	m3/yr	250	5,180,000	250
R015	Uncont. and Unsat. Strata Hydrological Data				
	Number of Unsaturated Strata		1	1	1
	Thickness	m	3	55	12
	Soil Density	g/cm3	1.8	1.5	1.6
	Total Porosity		0.3	0.3	0.4
	Effective Porosity		0.1	0.3	0.2
	Soil-specific b Parameter		10.4	4.05	4.05
	Hydraulic Conductivity	m/yr	44.5	1000	250
R018	Distribution Coefficients				
	Americium	Cm3/g	76	1900	200
	Plutonium	Cm3/g	218	550	200
	Uranium	Cm3/g	50	35	25

COMPARISON OF RESIDENTIAL RESRAD INPUT PARAMETERS FOR THE ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE, NEVADA TEST SITE (TONOPAH TEST RANGE) AND HANFORD

	Parameter	Units	Rocky Flats	Nevada Test Site (Tonopah Test Range)	Hanford
R017	Soil Inhal., Ingest. and External Gamma				
	Inhalation Rate	m3/yr	7000	6820	7300
	Mass Loading for Inhalation	g/m3	0.000026	0.000015	0.0001
	Dilution Length for Airborne Dust	M	3	3	3
	Exposure Duration	Yr	30	30	30
	Inhalation Shielding Factor		1	1	0.4
	External Gamma Shielding Factor		0.8	0.7	0.8
	Indoor Time Factor		1	0.58	0.6
	Outdoor Time Factor		0	0.0155	0.2
	Shape Factor		1	1	1
R018	Ingestion Pathway Data, Dietary Parameters				
	Fruits, Vegetables, and Grain Consumption	kg/yr	40.1	120.5	110
	Leafy Vegetable Consumption	kg/yr	2.6	10	2.7
	Milk Consumption	L/yr	Not Used	203.2	100
	Meat and Poultry Consumption	kg/yr	Not Used	93.3	36
	Fish Consumption	kg/yr	Not Used	0	5.4
	Other Seafood Consumption	kg/yr	Not Used	Not Used	Not Used
	Soil Ingestion	g/yr	70	37.4	36.5
	Drinking Water Intake	L/yr	Not Used	444.6	730
	Drinking Water Contamination Fraction		Not Used	1	1
	Household Water Contamination Fraction		Not Used	1	Not Used
	Livestock Water Contamination Fraction		Not Used	Not Used	1
	Irrigation Water Contamination Fraction		0	1	1
	Aquatic Food Contamination Fraction		Not Used	Not Used	0.5
	Plant Food Contamination Fraction		1	1	-1
	Meat Contamination Fraction		Not Used	-1	-1
	Milk Contamination Fraction		Not Used	-1	-1
R019	Ingestion Pathway Data, Nondietary				
	Livestock Fodder Intake for Meat	kg/day	Not Used	68	68
	Livestock Fodder Intake for Milk	kg/day	Not Used	55	55
	Livestock Water Intake for Meat	kg/day	Not Used	50	50
	Livestock Water Intake for Milk	L/day	Not Used	160	160
	Livestock Intake for Soil	kg/day	Not Used	0.5	0.5
	Mass Loading for Foliar Deposition	g/m3	0.0001	0.0000221	0.0001
	Depth of Soil Mixing Layer	M	0.15	0.15	0.15
	Depth of Roots	M	0.9	0.9	0.9
	Groundwater Fractional Usage-Drinking Water		1	1	1
	Groundwater Fractional Usage-Household Usage		Not Used	1	Not Used
	Groundwater Fractional UsageLivestock Water		Not Used	1	1
	Groundwater Usage Irrigation		Not Used	1	1
R021	Radon				
	Building Foundation Thickness	M	Not Used	0.15	Not Used
	Building Foundation Density	g/cm3	Not Used	2.4	Not Used
	Cover Material Total Porosity		Not Used	Not Used	Not Used
	Building Foundation Total Porosity		Not Used	0.1	Not Used
	Water Content of Cover Material		Not Used	Not Used	Not Used
	Water Content of Foundation		Not Used	0.03	Not Used
	Diffusion Coefficient for Radon Gas:		Not Used		Not Used
	Cover Material	m/sec	Not Used	Not Used	Not Used
	Foundation Material	m/sec	Not Used	0.0000003	Not Used
	Contaminated Zone Soil	m/sec	Not Used	0.000002	Not Used
	Vertical dimension of Mixing	M	Not Used	2	Not Used
	Annual Wind Speed	m/sec	Not Used	3.4	Not Used
	Building Air Exchange Rate	1/hr	Not Used	0.5	Not Used
	Height of Building	M	Not Used	2.5	Not Used
	Building Interior Area Factor		Not Used	0	Not Used
	Building Depth Below Ground Surface	M	Not Used	0	Not Used
	Emanating Power of Rn-222 gas		Not Used	0.2	Not Used
	Emanating Power of Rn-220 gas		Not Used	0.15	Not Used

TABLE 5
COMPARISON OF OFFICE WORKER RESRAD INPUT PARAMETERS FOR THE ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE, NEVADA TEST SITE (TONOPAH TEST RANGE) AND HANFORD

	Parameter	Units	Rocky Flats	Nevada Test Site (Tonopah Test Range)	Hanford
R02	Exposure Pathways				
	1-External Gamma		Active	Active	Active
	2-Inhalation		Active	Active	Active
	3-Plant Ingestion		Suppressed	Suppressed	Suppressed
	4-Meat Ingestion		Suppressed	Suppressed	Suppressed
	5-Milk Ingestion		Suppressed	Suppressed	Suppressed
	6-Aquatic Foods		Suppressed	Suppressed	Suppressed
	7-Drinking Water		Suppressed	Active	Suppressed
	8-Soil Ingestion		Active	Active	Active
	9-Radon		Suppressed	Active	Suppressed
R011	Contaminated Zone (CZ)				
	Area of CZ	sq. meters	40,000	248000	10,000
	Thickness of CZ	m	0.15	0.05	4.6
	Length Parallel to Aquifer Flow	m	Not Used	1640	100
	Radiation Dose Limit	mrem/yr	15	100	15
	Elapsed Time of Waste Placement	yr	0	0	0
R013	Cover and Contaminated Zone Hydrological Data				
	Cover Depth	m	0	0	0
	Density of Cover Material	g/cm3	Not Used	Not Used	Not Used
	Cover Erosion Rate	m/yr	Not Used	Not Used	Not Used
	Density of CZ	g/cm3	1.8	1.5	1.6
	CZ Erosion Rate	m/yr	0.0000749	0.000031	0.0001
	CZ Total Porosity		0.3	0.3	0.4
	CZ Effective Porosity		0.1	0.3	0.2
	CZ Hydraulic Conductivity	m/yr	44.5	1000	250
	CZ b Parameter		10.4	4.05	4.05
	Humidity in air	g/cm3	Not Used	Not Used	Not Used
	Evapotranspiration Coefficient		0.92	0.68	0.91
	Precipitation	m\yr	0.381	0.127	0.16
	Irrigation Rate	m\yr	0	1.53	0.76
	Irrigation Mode		Not Used	Ditch	Not Used
	Runoff Coefficient		0.004	0.2	0.2
	Watershed Area for Nearby Stream or Pond	m2	Not Used	311,000	1,000,000
	Accuracy for Water/Soil Computation		Not Used	0.001	0.001
R014	Saturated Zone (SZ) Hydrological Data				
	Density of SZ	g/cm3	Not Used	1.5	1.6
	SZ Total Porosity		Not Used	0.3	0.4
	SZ Effective Porosity		Not Used	0.3	0.2
	SZ Hydraulic Conductivity	m/yr	Not Used	1000	5530
	SZ Hydraulic Gradient		Not Used	0.0001	0.00125
	SZ b Parameter		Not Used	4.05	4.05
	Water Table Drop Rate	m/yr	Not Used	0.0001	0.001
	Well Pump Intake Depth	m	Not Used	10	4.6
	Nondispersion or Mass Balance		Not Used	Nondispersion	Nondispersion
	Well Pumping Rate	m3/yr	Not Used	5,160,000	250
R015	Uncont. and Unsat. Strata Hydrological Data				
	Number of Unsaturated Strata		Not Used	1	1
	Thickness	m	Not Used	55	12
	Soil Density	g/cm3	Not Used	1.5	1.6
	Total Porosity		Not Used	0.3	0.4
	Effective Porosity		Not Used	0.3	0.2
	Soil-specific b Parameter		Not Used	4.05	4.05
	Hydraulic Conductivity	m/yr	Not Used	1000	250
R016	Distribution Coefficients				
	Americium	cm3/g	76	1900	200
	Plutonium	cm3/g	218	550	200
	Uranium	cm3/g	50	35	25

TABLE 5
COMPARISON OF OFFICE WORKER RESRAD INPUT PARAMETERS FOR THE ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE, NEVADA TEST SITE (TONOPAH TEST RANGE) AND HANFORD

R017	Soil Inhal., Ingest. and External Gamma				
	Inhalation Rate	m3/yr	1660	3150	7300
	Mass Loading for Inhalation	g/m3	0.000026	0.0000136	0.00001
	Dilution Length for Airborne Dust	m	3	3	3
	Exposure Duration	yr	25	30	25
	Inhalation Shielding Factor		1	0.4	0.4
	External Gamma Shielding Factor		0.17	0.7	0.8
	Indoor Time Factor		1	0.228	0.22
	Outdoor Time Factor		0	0.0571	0.014
	Shape Factor		1	1	1
R018	Ingestion Pathway Data, Dietary Parameters				
	Fruits, Vegetables, and Grain Consumption	kg/yr	Not Used	Not Used	Not Used
	Leafy Vegetable Consumption	kg/yr	Not Used	Not Used	Not Used
	Milk Consumption	L/yr	Not Used	Not Used	Not Used
	Meat and Poultry Consumption	kg/yr	Not Used	Not Used	Not Used
	Fish Consumption	kg/yr	Not Used	Not Used	Not Used
	Other Seafood Consumption	kg/yr	Not Used	Not Used	Not Used
	Soil Ingestion	g/yr	12.5	18.25	36.5
	Drinking Water Intake	L/yr	Not Used	218.75	Not Used
	Drinking Water Contamination Fraction		Not Used	1	Not Used
	Household Water Contamination Fraction		Not Used	1	Not Used
	Livestock Water Contamination Fraction		Not Used	Not Used	Not Used
	Irrigation Water Contamination Fraction		Not Used	1	Not Used
	Aquatic Food Contamination Fraction		Not Used	Not Used	Not Used
	Plant Food Contamination Fraction		Not Used	Not Used	Not Used
	Meat Contamination Fraction		Not Used	Not Used	Not Used
	Milk Contamination Fraction		Not Used	Not Used	Not Used
R019	Ingestion Pathway Data, Nondietary				
	Livestock Fodder Intake for Meat	kg/day	Not Used	Not Used	Not Used
	Livestock Fodder Intake for Milk	kg/day	Not Used	Not Used	Not Used
	Livestock Water Intake for Meat	kg/day	Not Used	Not Used	Not Used
	Livestock Water Intake for Milk	L/day	Not Used	Not Used	Not Used
	Livestock Intake for Soil	kg/day	Not Used	Not Used	Not Used
	Mass Loading for Foliar Deposition	g/m3	Not Used	Not Used	Not Used
	Depth of Soil Mixing Layer	m	0.15	Not Used	Not Used
	Depth of Roots	m	Not Used	Not Used	Not Used
	Groundwater Fractional Usage-Drinking Water		Not Used	1	Not Used
	Groundwater Fractional Usage-Household Usage		Not Used	1	Not Used
	Groundwater Fractional Usage-Livestock Water		Not Used	Not Used	Not Used
	Groundwater Usage-Irrigation		Not Used	1	Not Used
R021	Radon				
	Building Foundation Thickness	m	Not Used	0.15	Not Used
	Building Foundation Density	g/cm3	Not Used	2.4	Not Used
	Cover Material Total Porosity		Not Used	Not Used	Not Used
	Building Foundation Total Porosity		Not Used	0.1	Not Used
	Water Content of Cover Material		Not Used	Not Used	Not Used
	Water Content of Foundation		Not Used	0.03	Not Used
	Diffusion Coefficient for Radon Gas:		Not Used		Not Used
	Cover Material	m/sec	Not Used	Not Used	Not Used
	Foundation Material	m/sec	Not Used	0.0000003	Not Used
	Contaminated Zone Soil	m/sec	Not Used	0.000002	Not Used
	Vertical dimension of Mixing	m	Not Used	2	Not Used
	Annual Wind Speed	m/sec	Not Used	3.4	Not Used
	Building Air Exchange Rate	1/hr	Not Used	0.5	Not Used
	Height of Building	m	Not Used	2.5	Not Used
	Building Interior Area Factor		Not Used	0	Not Used
	Building Depth Below Ground Surface	m	Not Used	0	Not Used
	Emanating Power of Rn-222 gas		Not Used	0.2	Not Used
	Emanating Power of Rn-220 gas		Not Used	0.15	Not Used

RAC responses to DOE comments from February 11, 1999 presentation

1. During the 1998 Rocky Flats Cleanup Agreement (RFCA) Annual Review of the Radionuclide Soil Action Levels, an agency working group reviewed radionuclide soil cleanup levels developed for Hanford and the Nevada Test Site and compared those soil cleanup levels and the methodologies use for the calculations to the RSALs developed for Rocky Flats. The working group reviewed the same documents used by *RAC* for Task1: Cleanup Levels at Other Sites, for the Nevada Test Site and Hanford, but in more detail than presented in the Draft Report for Task 1: Cleanup Levels at Other Sites. The Department of Energy (DOE) has attached to this letter a copy of the working group's summary of the comparison for your information. There may be information in this report useful to *RAC* as it completes Task 1.

   RAC appreciates DOE's inclusion of their working group report for our review. Our analysis of action levels at other sites included a direct comparison of action levels and doses for which these levels were calculated, while the RWG report includes a listing of parameters input into each calculation. Initially, we compared the input values for only a few significant parameters to determine the source of the disparity between Hanford and Rocky Flats and Nevada Test Site and Rocky Flats soil action level values. The final version of the Task 1 report will also include comparisons of industrial worker scenarios where appropriate and available, as well as a comparison of action levels for ^{241}Am.

2. The Draft Report claimed "the hypothetical future resident 85 mrem/year action level is the DOE recommended action level below which no remediation would be required..." This is not an accurate statement regarding action levels used at the RFETS. It is more accurate to state that an action level based on a 15 mrem/year dose level to a hypothetical future resident is the recommended contamination level below which no remediation would be required, assuming there is no impact to surface water. Further, the 85 mrem/year residential scenario was NOT used in RFCA to support a residential use scenario. The 85 mrem/year residential scenario was used to support an Open Space use scenario. This is because the draft EPA rule on which the RFCA Parties relied directly comparing 15 mrem/year for the anticipated use to 85 mrem/year for residential use and choosing the more conservative of the two scenarios. In this case, 85 mrem/year residential was more conservative than 15 mrem/year open space. While we recognize that this explanation does not change the arithmetic conclusion of the draft report, we did wish to make this clarification.

   RAC is grateful for the information and clarification provided by DOE.

3. The Draft Report states that "two parameters at RFETS emerged from the sensitivity analysis as most important and most sensitive to change: mass loading factor and the dose conversion factor." DOE agrees that these are two sensitive parameters; however, DOE also believes that there are other parameters that are sensitive and could significantly impact the final derivation of RSALs. The *RAC* may not have identified or considered these additional parameters. In order for DOE to evaluate the sensitivity analysis conducted by *RAC*, DOE requests that *RAC* provide a more detailed summary of the sensitivity analysis, including the methods and results of the sensitivity analysis, conducted by *RAC*.

When *RAC* completed and reported the sensitivity analysis, we completed it within the boundaries of our contract with the RFCAB. That is, at the January 14, 1999 RSAL meeting, we presented the results of a single-parameter sensitivity analysis of the existing Rocky Flats calculation. For comparison, we chose a single calculation to evaluate the sensitivity. Our selection was the 85 mrem/year hypothetical resident scenario. To comply with our contract and the definition of a single-parameter analysis, we took the hypothetical resident scenario and changed one parameter at a time, reporting to the panel only the most significant results of that analysis by way of the presentation given by Jill Weber in January 1999. In practice, *RAC* analyzed all of the parameters currently in use and reported the change in soil action level for 239Pu and the total dose during the first year of exposure, although all the radionuclide doses and soil action levels were reviewed.

This analysis was by no means the end of *RAC*'s parameter evaluation. As the goal of Task 3, *RAC* will review all of the parameters required as input to the computer model chosen in the Task 2 analysis and will select values appropriate to the Rocky Flats facility and potential residents.

4. The Rocky Flats Vision (part of the Rocky Flats Clean Up Agreement) states that Rocky Flats will be cleaned up to allow open space uses in the Buffer Zone, restricted open space or industrial use for most of the Industrial Area, and other appropriate uses. As of the February 11, 1999 Rocky Flats Soil Action Levels Oversight Panel meeting, *RAC* is currently considering a residential scenario and a current onsite worker scenario. Do the *RAC* and the Oversight Panel also plan to evaluate land uses consistent with the assumptions of the RFCA?

RAC firmly believes that to meet the goals and requirements of our contract with RFCAB, we need to evaluate not only scenarios and land uses proposed in the original soil action level document, but to provide additional scenarios, consistent with the Rocky Flats facility and possible uses in the future, for review by the panel. We will continue to work with the panel at future meetings to arrive at scenarios for analysis in the independent review by the time of the May 1999 Oversight Panel meeting.

Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

APR 01 1999

99-DOE-00012

Mary Harlow
City of Westminster
4800 West 92nd Avenue
Westminster, CO 80030

Dear Ms. Harlow:

Attached are comments and questions from Rocky Flats Environmental Technology Site's technical staff from the March 11, 1999, RSAL Oversight Panel meeting and based on the RAC Draft Task 2 Report.

We plan to attend the technical work session with RAC April 8,1999, and discuss these issues there.

Thank you for your work on this panel and for your support of the clean up and closure of the Rocky Flats Environmental Technology Site.

Sincerely,

Jeremy Karpatkin

for RLM

Jeremy Karpatkin

Attachment

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APR 01 1999

Technical Comments and Questions to the RAC Presentation on March 11, 1999, And the RAC Draft Report for Task 2: Computer Models

1. The sum of ratios methodology historically applied at the Rocky Flats Environmental Technology Site is based on the aggregation of all soil concentrations in a given area and the 95% Upper Confidence Level of the mean soil concentration is used to make the sum of ratios determination. This methodology has been agreed to by the Rocky Flats Cleanup Agreement (RFCA) Parties and is consistent with RFCA and EPA CERCLA guidance. The sum of ratios methodology described in Sections 2.1 and 2.2 of the draft report appear to be based on the premise that each individual soil concentration is compared with the soil action level. Please explain in greater detail why the RAC believes that its sum of ratios methodology is superior to the sum of ratios methodology historically used by the RFCA Parties?

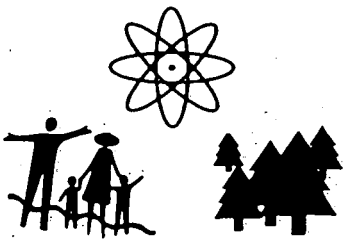
2. During the technical session on March 11, 1999, there was a discussion on the possibility of treating exposure parameters (e.g., breathing rates, soil ingestion rates, fruit and vegetable ingestion rates, etc.) as distributions in the RAC uncertainty analysis for each exposure scenario. What is the status of this approach? Will it be incorporated into this report and into subsequent exposure scenario discussions?

3. RAC concludes that the air resuspension models used in RESRAD, both pre and post Version 5.75, are inadequate for use at Rocky Flats and proposes, as one possibility, to replace the RESRAD air resuspension model with equations from Cowherd. It is our understanding that the Cowherd equations are meant to assess an emergency response situation of less than 24-hour duration, while soil action levels are based on the average annual concentration of radioactive material in air. Can the RAC explain in greater detail specifically what it found inadequate in the air resuspension modeling of RESRAD (pre and post 5.75 version) and why it finds the Cowherd equations more applicable than the RESRAD air resuspension model for use at Rocky Flats? (Please assess both pre and post Version 5.75.)

4. Can the RAC explain in greater detail why the current beta-test version of the RESRAD Monte Carlo code is not satisfactory for RAC's purposes?

RSALOP

Radionuclide Soil Action Level Oversight Panel



May 28, 1999

Jeremy Karpatkin, Director
Office of Communications
U. S. Department of Energy - Rocky Flats Field Office
PO Box 928
Golden, CO 80402

RE: RESPONSES TO YOUR APRIL 1, 1999 LETTER #99-DOE-00012 AND YOUR MAY 03, 1999 LETTER #99-DOE-00024

Dear Jeremy:

We received the above letters with attached questions regarding the ongoing soil action levels review and forwarded them on to *Risk Assessment Corporation (RAC)* for review and follow-up.

Enclosed are the responses from Dr. John Till, RAC, to those questions. Thank you again for your ongoing interest in and support of this project.

Sincerely,

Hank Stovall @
Hank Stovall, RSALOP Co-Chair

Mary Harlow @
Mary Harlow, RSALOP Co-Chair

cc:
U.S. Department of Energy
Jessie Roberson

RSALOP Members

40

RAC Responses to DOE Comments Dated April 1, 1999

1. The sum of ratios methodology historically applied at the Rocky Flats Environmental Technology Site is based on the aggregation of all soil concentrations in a given area and the 95% Upper Confidence Level of the mean soil concentration is used to make the sum of ratios determination. This methodology has been agreed to by the Rocky Flats Cleanup Agreement (RFCA) Parties and is consistent with RFCA and EPA CERCLA guidance. The sum of ratios methodology described in Sections 2.1 and 2.2 of the draft report appear to be based on the premise that each individual soil concentration is compared with the soil action level. Please explain in greater detail why the *RAC* believes that its sum of ratios methodology is superior to the sum of ratios methodology historically used by the RFCA Parties?

   DOE should be aware that what was "agreed to" by the Rocky Flats Cleanup Commission may not be the approach we prefer to take.

   There is no difference in the methods. Our method is explained clearly in the Task 2 report, and we believe it is the best approach to take to accommodate uncertainties, which is a primary objective of our work. Basically, if we consider the scenario definitions and dose limits fixed, then all uncertainty is associated with the calculated soil action levels. One view of our goal is to estimate a probability P that the annual dose limit will not be exceeded if the soil contamination equals any specified level (including the soil action level), given the exposure scenario. The probability P should be interpreted as a measure of confidence based primarily on the uncertainties in parameters and data; it does *not* represent the fraction of an exposed population for which the annual dose does not exceed the limiting value. Thus, P does not represent the probability that an individual would be exposed; all individuals described by the scenarios are exposed by definition. What we would estimate is a level of confidence that the exposure would produce an annual dose that does not exceed a set limit, given contamination at the soil action level.

2. During the technical session on March 11, 1999, there was a discussion on the possibility of treating exposure parameters (e.g., breathing rates, soil ingestion rates, fruit and vegetable ingestion rates, etc.) as distributions in the *RAC* uncertainty analysis for each exposure scenario. What is the status of this approach? Will it be incorporated into this report and into subsequent exposure scenario discussions?

   As we discussed at the past meeting, we do not intend to use a distribution for parameters characterizing the scenarios. We have discussed our reasoning for this at length at the monthly meetings. Any subsequent work done on this issue would depend on time and resources available.

3. *RAC* concludes that the air resuspension models used in RESRAD, both pro and post Version 5.75, are inadequate for use, at Rocky Flats and proposes, as one possibility, to replace the RESRAD air resuspension model with equations from Cowherd. It is out understanding that the Cowherd equations are meant to assess an emergency response situation of less than 24-hour duration, while soil action levels are based oil the average *annual* concentration of radioactive material in air. Can the *RAC* explain in greater

detail specifically what it found inadequate in the air resuspension modeling of RESRAD (pro and post 5.75 version) and why it finds the Cowherd equations more applicable than the RESRAD air resuspension model for use at Rocky Flats? (Please assess both pre and post Version 5.75).

As we state in our report and stated in our proposal, we believe that where possible, site-specific data should be used in lieu of a generic model. We do question the generic use of these models for critical decision-making, especially when site specific data are available. We are now working with site-specific data that we have located and explained in the Task 2 report as an example. The equations of Cowherd are under consideration for use but so are additional approaches. When we have had a chance to complete our analysis of the data and decide exactly how they will be used, this will be documented. This approach we believe is more reasonable and defensible than using a generic model in REDRAD.

4. Can the *RAC* explain in greater detail why the current beta-test version of the RESRAD Monte Carlo code is not satisfactory for *RAC*'s purposes?

As we stated in our proposal, we are concerned about the beta test version being thoroughly tested and verified. We prefer to use our own Monte Carlo sampling routines using verified and validated sampling routines available in the public domain. For further information on this, see page 28 of the proposal.

3. *RAC* is currently setting their exposure parameters (e.g., daily exposure frequency, annual exposure frequency, breathing rate and soil ingestion rate) for the resident rancher exposure scenario at the 95th percentile of the distribution. This methodology for selecting exposure parameters is more conservative than the methodology used by EPA, which uses a mixture of upper percentile values mid mean values to arrive at an exposure scenario that describes an exposure in the 90-95 percent range. Specifically, EPA uses upper percentile values for the daily exposure frequency and annual exposure frequency while using mean values for the breathing rate and soil ingestion rate. This mixture of upper values and mean values for the breathing rate and soil ingestion rate. This mixture of upper values and mean values represents a "Reasonable Maximum Exposure" for the exposure scenario being evaluated. (For a discussion of the EPA methodology, please see Section 6.4,1 of the Risk Assessment *Guidance for Superfund, Volume 1. Human Health Evaluation Manual [Part A]*_[EPA/540/1-89/002) along with the exposure parameter selections within OSWER Directive 9285.6-03, "Human health Evaluation Manual, Supplemental Guidance' Standard Default Exposure Factors, ")

Can the *RAC* explain why it believes its methodology is preferable to the EPA methodology for setting exposure- parameters? What cumulative level of conservatism is *RAC* introducing into the radiation dose, calculations for the resident rancher by using the 95" percentile value for all exposure parameters?

As we have stated in previous correspondance, *RAC* is aware of the EPA reports cited in the question and has copies of them. Many of the studies we have used in formulating our scenarios are studies that EPA used in formulating its recommendations. Selecting appropriate parameters for the scenarios depends upon a thorough review of the scientific literature and fully considering the uncertainty distributions of the relevant parameters. *RAC* believes that it was important to go back to the original studies when possible to evaluate the data for use in developing uncertainty distributions. Subsequently, we generated a distribution of values using Monte Carlo techniques. At numerous meetings we have described our methods and assumptions for selecting parameter values for breathing rates and soil ingestion rates for the scenarios. *RAC* is not setting all exposure parameters for the resident rancher exposure scenario at the 95th percentile of the distribution.

At the May meeting, we described our approach and assumptions for selecting soil ingestion values for the scenarios at the 50th percentile level of the distribution. Most soil ingestion studies are conducted under fairly idealized conditions, or during more mild seasons of the year, and researchers tend to point this out in their reports. This timing factor provides conditions where children may have more ready access to open play areas and outdoor activities and adults are more involved in gardening activities. While these values that are derived from studies conducted from a few days to a few weeks are quite valid in estimating daily soil ingestion rates, there is a need to carefully consider the implications of translating this daily soil ingestion rate to an annual soil ingestion rate. When converting this rate to an annual intake, care must be given because the year includes large periods of time where outdoor inadvertent soil ingestion activities may be somewhat limited by snow cover, frozen ground, and inclement weather. For these reasons, we are using the 50th percentile of our distribution for our daily soil ingestion rate.

Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
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JUN 16 1999

99-DOE-00033

Hank Stovall
City of Broomfield
One DeCombes Drive
Broomfield, CO 80020-2495

Dear ~~Mr. Stovall:~~ Hank,

Thank you for taking the time to meet with me and other site representatives June 10, 1999, to discuss communications and other issues relating to the independent review of the Soil Action Levels. I am glad we had an opportunity to discuss some of our concerns.

I was pleased to hear from you that the Radionuclide Soil Action Level (RSAL) Oversight Panel (OP) does indeed plan to have the Risk Assessment Corporation (RAC) review the inputs, parameters and assumptions of the agency scenarios as laid out in Task 3 of the Request for Proposal for this project. As we discussed, this has been a point of some confusion over the last several weeks. Your commitment to ensuring that this is part of the RAC project is particularly reassuring in light of RAC's response to this question, distributed at the June 10, 1999, RSAL OP meeting (see enclosure).

We also discussed the current process the Rocky Flats Environmental Technology Site (Site) uses for asking questions of the RAC and of the RSAL OP. You expressed concern that the current process of posing written questions may be cumbersome, and perhaps could be expedited by making better use of the technical review sessions and the public meetings. We will endeavor to take advantage of these sessions more, and we appreciate your willingness to allow site technical staff to speak and ask questions during these sessions.

I expressed to you the Site's need to obtain more, and more detailed information from the RAC to help us understand why and how they are reaching their conclusions. At the end of this process the Rocky Flats Cleanup Agreement Parties (among them DOE) will need to seriously evaluate the work of the RAC and the Radionuclide Soil Action Level Oversight Panel before making any modifications to the RSALs. In order to take actions on the work of the RAC, DOE will need to know in some depth on what technical basis the RAC is making its recommendations. This is especially the case where the RAC is choosing to go beyond Environmental Protection Agency or CERCLA guidance. DOE is concerned that this level of documentation has thus far not been forthcoming.

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Further, I do not believe that the responses to our written questions have provided this kind of necessary technical information.

You said you would get back to us about the best way to expedite the provision of this kind of information. Obviously, there are many different ways to ensure that our need in this area is met, and we look forward to discussing this with you further to work this out. Of course, we would welcome involving the RAC in this conversation as you see fit.

Thanks again for meeting with us and for your ongoing work in this area. If you have any questions, or need additional assistance please contact me at 303-966-8392.

Sincerely,

Jeremy Karpatkin

Enclosure

cc w/o Enclosure:
R. McCallister, EI, RFFO
D. Shelton, K-H
J. Corsi, K-H
L. Brooks, K-H
R. Roberts, SSOC

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Risk Assessment Corporation
417 Till Road, Neeses, South Carolina 29107
phone 803.536.4883 fax 803.534.1995
www.racteam.com

June 22, 1999

Ms. Mary Harlow and Mr. Hank Stoval
Co-Chairmen, Radionuclide Soil Action Level Oversight Panel
c/o Anna Corbett
AIMSI
5460 Ward Rd.
Suite 370
Arvada, CO 80002

Dear Mary and Hank:

We are extremely discouraged and distressed with the comments of June 16 by Mr. Jeremy Karpatkin of The Department of Energy (DOE). The second paragraph of his letter leaves us at a loss as to how to better provide documentation for verifying and understanding the work we are conducting. Most importantly, the suggestion that we have "not been forthcoming" with information strikes at the heart of our integrity as scientists, as a respected research organization, and as individuals. We are frustrated about what else we could have provided at this point in our work that would make the approach more clear. This letter certainly brings into question the independence we have been assured in conducting this project and that is written into the contract we signed.

I have carefully reviewed our proposal and the reports we have submitted thus far and am certain that we are fulfilling our commitments. It is important that everyone understand that we have not yet completed our analysis and indeed are still working out some of the details of our methods. This point has been stressed at every meeting. There will be some elements of our methods that will not be documented until we submit the Task 5 report in September because they require extensive data analysis and time commitments. We are documenting the assumptions we are making so they can be verified independently by peer reviewers and others who may wish to check them. This is an important element of good science.

With regard to DOE's questioning our evaluation of their proposed parameters and assumptions, we are including DOE's three scenarios in our calculation along with four additional scenarios we proposed and that were approved by the panel. We have conducted a sensitivity analysis on the parameters used in the calculation and identified those that are important and those that are not sensitive to the analysis. For those parameters that are not sensitive to the calculation, we do not recommend changing the parameter values nor will we spend effort defending the value chosen. This would be a needless waste of resources. This has been discussed with the panel several times. For parameters to which the model is sensitive, we intend to change the value to either a distribution of values or a site-specific value. We will include documentation about the revised values. Some of this information has already been provided in our selection of the four new scenarios. I am not sure how to make this point any more clear.

It is very important to stress that we have always intended to "go beyond Environmental Protection Agency or CERCLA guidance." I do not believe that guidance restricts agencies from applying better science and site-specific data when they are available. More importantly, we were asked to independently calculate soil action levels and this mandate requires us to apply the best methods and information we can provide within the limits of budget and time. This is exactly what we are dong.

Finally, I am very disappointed that the Department of Energy seems to have taken an adversarial role in this process rather than an active partner in fostering its success. I still believe that the approach we are following will become a model for other sites and that there are many lessons being learned from it. This project is by far the most challenging we have ever undertaken. Trying to develop and apply good technical methods and work with a very thoughtful, intelligent and engaged panel is a significant undertaking. We will continue to do our best to work with you, the panel, and DOE to make it something we can be proud of in the end.

Sincerely,

John E. Till, Ph.D
President

Copy to: Oversight panel, DOE

Risk Assessment Corporation
417 Till Road, Neeses, South Carolina 29107
phone 803.536.4883 fax 803.534.1995
www.racteam.com

MEMO

June 22, 1999

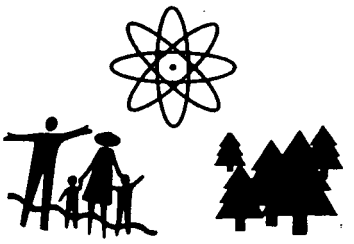
From: **John Till**
To: **Anna Corbett**

Anna will you please see that a copy of this letter is given to the panel and that a copy is sent to the DOE manager of Rocky Flats. If this is a problem, please let me know. I do not have the addresses.

Thank you.

RSALOP

Radionuclide Soil Action Level Oversight Panel



July 8, 1999

Jeremy Karpatkin, Director
Office of Communications
U. S. Department of Energy - Rocky Flats Field Office
PO Box 928
Golden, CO 80402

RE: RESPONSE TO YOUR JUNE 16, 1999 LETTER #99-DOE-00033

Dear Jeremy:

We have received and reviewed your letter dated June 16, 1999 in regard to our recent meeting with you on June 10, 1999 scheduled to discuss communications and other issues relating to the independent review of the radionuclide soil action levels (RSALs). Frankly, we are concerned about some of the issues that you raise in the letter. It appears by your statements that you are taking a position that could discredit and undermine the study and its purpose and importance to this community. We sincerely believed that the Department of Energy (DOE) would stand by its commitment to not interfere with the review process and would withhold judgement until the final report was issued.

The *Risk Assessment Corporation (RAC)* was chosen to provide this important review because of their knowledge, experience and professionalism. To question *RAC's* technical expertise at this point in the study is premature and unwarranted. *RAC* has been forthcoming in providing detailed replies to every question that the Department of Energy has forwarded to them.

Dr. John Till, *RAC*, has stated publicly that *RAC* will not change the majority of the input parameters that the DOE chose for the RESRAD model. *RAC* determined that changes to these parameters would have little effect on the model results. *RAC's* attention is and will be primarily focused on those parameters that may significantly affect the model outcome. These parameters are the very site-specific parameters that CERCLA guidance does not take into consideration and are the ones that this community is most concerned about.

The reply from *RAC* to the questions related to the interim RSALs and review of development and input that you attached to your review clearly state: *"RAC will use the scenarios, along with four additional scenarios that RAC developed, and will provide commentary on some of the parameters, models and approaches that were used in setting the original RSALs as they pertain to implementing RAC's approach. They do not intend to critique every element of the previous RSAL calculations but to explain where there are differences and to justify choosing one method above another."* This reply seems to cover your concerns adequately.

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Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

JUN 18 1999

99-DOE-00035

Mickey Harlow
City of Westminster
4800 West 92nd Avenue
Westminster, CO 80030

Dear Ms. Harlow:

Thanks for your letter of April 27, 1999, updating me on the status of the Radionuclide Soil Action Level Oversight Panel (RSAL) independent review.

I am pleased that the RSAL oversight panel (OP) and the Risk Assessment Corporation (RAC) are making steady progress on the review, and I share your goal of ensuring that the Rocky Flats Environmental Technology Site (Site) RSALs are protective of public health and the environment.

I appreciate the efforts by the RSAL OP to allow time for agency representatives to ask technical questions prior to and during the regular monthly sessions with the RSAL OP and the RAC. The RSAL OP is to be congratulated for your efforts to keep this project on track and to maintain an open, public process.

I understand that at a meeting with some Site staff June 10, 1999, you expressed concern that the Department of Energy's (DOE) practice of submitting written questions after each RSAL OP meeting is becoming burdensome. DOE will try to make better use of the technical work sessions and the public meetings to raise our questions and issues.

However, it is important to DOE to place our questions in writing and to receive written responses for our own records. DOE needs to understand in detail what RAC is recommending, the technical basis for these recommendations, and why RAC believes that its approach is superior to that of the Rocky Flats Cleanup Agreement parties. This kind of information is not easily forthcoming except through written questions and receipt of written documentation and responses. When the RSAL review process is complete, the DOE staff will carefully review the recommendations of RAC and of the RSAL OP. That review will need to be based not on oral recollection or handwritten notes, but on a more formal record of written questions and answers.

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Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

JUL 0 2 1999

99-DOE-00044

Mickey Harlow
City of Westminster
4800 West 92nd Avenue
Westminster, CO 80030

Dear ~~Ms. Harlow:~~ Mickey,

Enclosed are questions developed by the Rocky Flats Environmental Technology Site (Site) technical staff in response to the Radionuclide Soil Action Level (RSAL) Oversight Panel (OP) public meeting June 10, 1999, the Technical Review session June 10, 1999, and overall to the Draft Task 6 report on Sampling Protocols.

Some of these issues were discussed at the Technical Review session prior to the June 10, 1999, RSAL OP meeting. They are enclosed because there was not adequate time to discuss these issues thoroughly at the Technical Review session and because the Site needs a more formal written response.

Question 1 refers to Risk Assessment Corporations (RACs) analysis and recommendations for applying the MARSSIM methodology to soil remediations. Although the Site has experience applying this methodology to building clean ups, we are still exploring whether the MARSSIM methodology could be applied to soil remediations and, if so, what are the most optimal ways to use this methodology for Environmental Restoration work. This makes the RAC recommendations, for us, quite timely. Questions 1 and 2 ask the RAC for greater detail than is currently contained in the Draft Task 6 report. In the event that the RSAL OP and the RAC believe that the questions posed here go beyond the scope of the RAC review, do not interpret this letter as direction to add new scope to your study. Simply indicate that answering these questions goes beyond your scope.

I hope it is still timely for RAC to consider these issues in the Task 6 report. The minutes from the June 10, 1999, meeting are unclear on the precise path forward for Task 6. Although the minutes state that comments will only be accepted until June 18, 1999, the minutes later state that RAC will continue to work on this report and then release the Task 6 report by October 8, 1999. The minutes do not make clear if future revisions of the Task 6 report will be subject to agency and public comment prior to October 8, 1999. Any clarification you can provide on the next steps on the Task 6 Report would be helpful.

I also wanted to revisit an issue that the Site addressed in a previous question. In correspondence dated May 28, 1999, the RSAL OP provided to the Department of Energy (DOE) responses to questions dated April 22, 1999. The first question dealt with developing scenarios and RAC's proposed use of these scenarios. It is clear from the response that DOE's question was not

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sufficiently clear. The RAC explained well how it will use each scenario to develop a proposed soil action level for that specific scenario. The DOE's question was how each of these scenario-specific RSALs will contribute to an overall recommendation from RAC to the RSAL OP for an overall site RSAL.

For example, the agencies compared a scenario of institutional control failure (a hypothetical future resident) at 85 mrem to a scenario of anticipated future use at 15 mrem and chose the more conservative of the two as the scenario that determined the soil action level. The DOE's basic question is how the scenario-specific RSALs developed by RAC will be used to determine the final RSAL. If RAC does not know at this time the answer to this question, can RAC provide to DOE in which Task Report this recommendation will be contained? (Reviewing the RAC workplan, it is not clear in which Task Report this issue will be addressed.) Obviously, RAC need not be bound by the methods used by the agencies in 1996. Our question at this time is simply when to expect -- and in what Task number -- this issue will be addressed.

Thank you again for your ongoing work in this area.

Sincerely,

Jeremy Karpatkin

Enclosure

cc w/Enclosure:
P. Bubar, EM-64, HQ
F. Lockhart, CPM, RFFO
J.Rampe, CPM, RFFO
R. McCallister, E&I, RFFO
D. Shelton, K-H
J. Corsi, K-H
L.Brooks, K-H
R. Roberts, SSOC

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1. The DOE and the Kaiser-Hill Team do not understand RAC's recommendation on applying MARSSIM to the radionuclide soil action level study. The approach, as recommended, seems appropriate for a final status survey of surface soils; however, the Task 6 Report does not explain clearly how RAC would apply the final status survey requirements from MARSSIM to the characterization and remediation of surface soils and to subsurface soils. Please elaborate on the recommendation in the final report for Task 6: Sampling Protocols to address how the final status survey requirements in MARSSIM would apply to the characterization and remediation of surface soils and to subsurface soils, as well as why RAC believes this approach is preferable to the approach taken by the RFCA Parties.

2. The Task 6 report uses the parameters of "Area of Contaminated Zone," "Initial Concentrations of Radionuclides," "Mass Loading," and "Shape Factor" based on actual soil concentrations. While DOE is a strong advocate of using site specific data to the extent possible, using site specific information for these input factors is a departure from how action levels are usually developed for cleanup sites. Action levels are developed so that they can be applied to many different cleanup sites without needing to be recalculated. If actual soil concentrations are used, it seems that a unique action level would need to be calculated for each cleanup site. Please clarify why RAC believes that their approach is preferable to the approach taken by the RFCA Parties in developing action levels.

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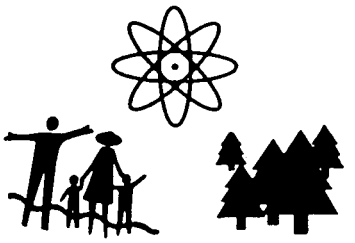
RSALOP

Radionuclide Soil Action Level Oversight Panel



August 26, 1999

Jeremy Karpatkin, Director
Office of Communications
U. S. Department of Energy - Rocky Flats Field Office
PO Box 928
Golden, CO 80402

RE: RESPONSE TO YOUR JULY 2, 1999 LETTER #99-DOE-00044

Dear Jeremy:

We received and reviewed the above-referenced letter and questions regarding the June RSALOP meeting. Enclosed are responses from *Risk Assessment Corporation* to your questions regarding use of the MARSSIM methodology and use of site-specific data in scenario development. Your letter also posed several questions related to review of the Task 6 document prior to its final release as well as scenario development. If there are still questions regarding these items, please address them at the technical briefing immediately prior to the Panel meeting scheduled for September 9, 1999.

We would also like to express our appreciation for the support provided by site contractors at the July workshop on Radiation Detection and Instrumentation. Larry Umbaugh, Canberra Industries, and Bates Estabrooks, RMRS, presented information related to current monitoring techniques employed at the site. John Corsi, Kaiser-Hill, videotaped the presentations to be sure the information is available to interested individuals who were unable to attend the workshop. In addition, Dave Shelton, Kaiser-Hill provided a timely update on the Actinide Migration Panel's work.

The second public meeting is scheduled for September 8, 1999 from 7 – 9 p.m. at the Broomfield City Building. Panel members and RAC representatives will be on-hand to provide a project update to the community as we move into the final stages of the study. Thank you again for your ongoing interest in and support of this project.

Sincerely,

Hank Stovall, RSALOP Co-Chair

Mary Harlow, RSALOP Co-Chair

Enclosure: As Stated
cc:

DOE-RFFO	Kaiser-Hill	RSALOP Members
R. McCallister	L. Brooks	
Jessie Roberson	J. Corsi	
	D. Shelton	

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Responses Provided by *Risk Assessment Corporation* to DOE's Concerns in Letter # 99-DOE-00044 Pertaining to TASK 6:

DOE Question 1

The DOE and the Kaiser-Hill team do not understand RAC's recommendation on applying MARSSIM to the radionuclide soil action level study. The approach, as recommended, seems appropriate for a final status survey of surface soils: however, the Task 6 report does not explain clearly how RAC would apply the final status survey requirements from MARSSIM to the characterization and remediation of surface soils and to subsurface soils. Please elaborate on the recommendation in the final report for Task 6: Sampling Protocols to address how the final status survey requirements in MARSSIM would apply to the characterization and remediation of surface soil and to subsurface soils, as well as why RAC believes this approach is preferable to the approach taken by the RFCA Parties.

Response:

RAC and the RSALOP have agreed that the Task 6 report will be directed toward the final status survey and the Task 6 report is currently being revised accordingly. *RAC* does not recommend the application of the MARSSIM methodology to characterization surveys or soil remediation studies. MARSSIM is intended to apply to the final status survey and not to scoping or characterization surveys undertaken for the specific purpose of planning remedial action. The latter objective would involve different guidelines for sampling strategies and analyses.

RAC and the RSALOP agree that remediation strategies are outside of the scope of the soil action level review and should be left to the discretion of DOE and the Kaiser-Hill team. The main concern of the RSALOP is to ensure that the soil action levels have been attained at the RFETS, and *RAC* has recommended that the focus be placed on the final status survey as the avenue for ensuring attainment of the soil action levels.

The soil action levels are being developed for the surface soils at RFETS, and *RAC* has noted in the Task 2 and 3 reports that surface water and groundwater pathways are not being evaluated for all the scenarios. Groundwater is an extremely complex pathway and RAC will not assess it in significant detail in the soil action level project because of the extensive ongoing research and its complexity. *RAC* will, however, provide a bounding level, screening calculation for a single scenario (DOE/CDPHE resident) with contaminated drinking water as a pathway for dose. However, the screening level analysis of the groundwater pathway will be used to assess the impact on the surface soil action levels and not for the purpose of developing subsurface soil action levels. A sensitivity analysis presented in the Task 2 report indicated that the inclusion of the groundwater pathway had little impact on the overall soil action levels except for ^{241}Pu, ^{241}Am, and ^{234}U, and we expect that this will be true in future simulations because inhalation and external doses tend to outweigh ingestion doses for most nuclides. *RAC* cautions that the results of the groundwater assessment are subject to reinterpretation based on any new findings from actinide migration studies and additional investigations performed for site remediation purposes.

RAC has provided a discussion in the Task 2 report (see section 3.1.2 and equations in section 2.1) concerning remedial strategies. The Task 2 report notes that programs such as RESRAD proceed on the assumption of a uniformly contaminated area (subject to variation within a factor of 3). For some scenarios it could be desirable to subdivide the site area into some number of plots, each of which can be treated as having a uniform concentration of each radionuclide, but with concentrations varying from one plot to another. Such subdivision might be of assistance in the planning for remediation, because the effects of reducing the most contaminated plots by various amounts can be studied explicitly. However, given the relatively small area of the most highly contaminated soil, we would be reluctant to recommend this refinement without careful

Department of Energy

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JUL 28 1999

99-DOE-00056

Hank Stovall
City of Broomfield
One DeCombes Drive
Broomfield, CO 80020-2495

Dear Mr. Stovall:

Enclosed are the questions from the Rocky Flats Environmental Technology Site (Site) technical staff relating to the draft Task 3 report from the Risk Assessment Corporation (RAC), titled "Inputs and Assumptions."

As you will see, there are more questions than usual in relation to this draft report. This is due largely to the Site's sentiment, expressed at the July 8, 1999, meeting that this report, along with the Task 5 report, Independent Calculation, represents the "meat and potatoes" of this review.

Several of the questions are essentially requests for more information. Questions 1, 3, 7, 8 and 10 all are requests for additional information to allow site staff to reconstruct the results or conclusions reached in the draft report. Also, questions 2, 5 and 11 all pertain to possible new or forthcoming information that may be relevant to topics addressed in the draft 3 report. Questions 6 and 9 both speak to areas where site technical staff did not completely understand RAC's methodology or approach.

Question 4 speaks to a more basic strategic issue. It is still not clear from this draft report how RAC proposes to analyze the agency scenarios utilizing the information and conclusions on inputs, assumptions and parameters from the Task 3 report.

The Site technical staff will plan to attend the technical session prior to the August 12, 1999, meeting.

I also wanted to take this opportunity to respond to your letter of July 8, 1999, responding to my letter of June 16, 1999.

I do not have anything to add to my comments at the July 8, 1999, Radionuclide Soil Action Level (RSAL) Oversight (OP) meeting. I do not believe anything I said in my June 16, 1999, letter constituted "discrediting or undermining" the RSAL study. The Department of Energy (DOE) does stand by its commitment to not interfere with the review process and withhold judgement until the final report is issued.

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I remain willing, even eager; to continue to work with you to resolve any issues or concerns that may arise in the course of this review. As I have stated before, DOE does have certain specific information needs during this review, but DOE remains flexible and open as to how we meet these needs. At any time, I am open to discussing with you ways we can improve the process or resolve any outstanding issues.

Thanks again for your time and involvement in these issues, and for your support of the clean up of the Site.

Sincerely,

Jeremy Karpatkin

Enclosures

cc w/Enclosures:
P. Bubar, EM-64, HQ

cc w/o Enclosures:
J. Rampe, EI, RFFO
R. McCallister, EI, RFFO
F. Lockhart, CPM, RFFO
D. Shelton, K-H
J. Corsi, K-H
L. Brooks, K-H
R. Roberts, K-H

Comments and Questions on RAC's Draft Report for Task 3: Inputs and Assumptions

1. Pages 4 through 10 of the draft Task 3 report summarizes the results of a sensitivity analysis, but does not provide the full documentation that lies behind this analysis. At the RAC Sensitivity Analysis for RESRAD Parameter presentation on January 14, 1999, the most sensitive parameters were identified as solubility of plutonium/dose conversion factor and the mass loading factor. The less sensitive parameters were identified as cover depth, breathing rate and soil ingestion. During the Project Update presentation in May 1999, the impacts between using RESRAD v5.61 and 5.82 were identified. The documentation supporting the sensitivity analysis is needed to understand how RAC classified the parameters as discussed on page 4 of the Task 3 Report without having an independent reviewer repeating each sensitivity analysis. Please provide in the final report documentation supporting the sensitivity analysis.

2. RAC has recommended an "Indoor Dust Filtration" factor of 1.0 (page 5). The Rocky Flats Cleanup Agreement (RFCA) Parties have identified new information from both EPA (Exposure Factors Handbook) and NCRP (NCRP Report No. 129) that may impact this input and are evaluating this information as part of the RFCA annual review process. Has RAC evaluated the new information available from the EPA and NCRP as it relates to this parameter?

3. Table 2, "Relative Concentration of Radionuclides in Soil at Rocky Flats in 1999," could not be verified with the information and references provided in the draft report. Please include in the final report the data representing how the mass values from the references listed were converted to activities and allowed to decay (or grow in, in the case of ^{241}Am) to the year 1999 for use in the RESRAD calculations.

4. It is not clear from the Task 3 report how RAC plans to analyze the agency scenarios. Specifically, it is not clear if RAC plans to substitute its own parameter values for the agency values (as shown in Table 4) in calculating new recommended RSALs for the agency scenarios. Can RAC clarify this issue? Also, Table 10 lists the different Scenario Parameter Values for DOE and RAC scenarios. It is not clear from the table or from the text if RAC concurs with or is simply not analyzing the parameter values for the DOE scenarios. For example, the agencies assumed for an Open Space scenario a value for time on site of 125 hours per year. By not adjusting this parameter, is RAC endorsing it or simply choosing not to analyze it? Or has RAC concluded that it is not sensitive and therefore does not merit more detailed analysis? In other words, does RAC agree that the agencies have appropriately defined their own scenarios, or for the purpose of analysis is RAC simply accepting the Scenario parameter values as is?

5. The Actinide Migration Team has recently completed work directly related to Kd values. We attached a copy of the report that we believe is relevant to the Task 3 report.

6. RAC has defined a model of ^{239}Pu concentration in soil as a function of location (page 20). Do similar models need to be defined for ^{241}Am or U? If yes, what task report will explain this extrapolation? If not, will the Pu data be extrapolated for Am and/or U?

7. Figure 2 represents the locations of more than 588 soil samples of ^{239}Pu at Rocky Flats which were used as a basis for a spatial model. While the text states the sources of the raw soil concentration data, the text also states that the 588 soil samples are a subset of the raw soil concentration data (page 22). Please provide in the final report a list, including the source, of the 588 entries.

8. RAC's recommended breathing rates (page 36) could not be verified with the information in this report. As captured in the RAC Scenario presentation on January 14, 1999, it is important to understand the duration of daily activities for each receptor in order to calculate a breathing rate. For clarity, please incorporate the assigned duration for the various daily activity levels in the final report. Also, please incorporate the distributions of breathing rates for active and sedentary adults, for active and sedentary children, and for active and sedentary infants (as captured in the RAC Breathing Rate

Distributions presentation on March 11, 1999) in the final report. Please also explain why and on what basis RAC recommended using the 95th percentile value from the breathing rate distribution.

9. RAC recommended identical annual soil ingestion values for each of RAC's recommended scenarios, i.e., current site industrial worker, resident rancher, infant of rancher, and child of rancher (page 39). Is it possible to create a frequency distribution of soil ingestion values for each scenario similar to what was done for breathing rates?

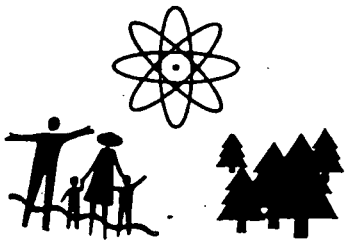
10. The RAC recommended consumption rates for fruits, nonleafy vegetables and grains (page 40) could not be verified from NCRP Report 129. Please state where in NCRP Report 129 these ingestion rates were taken. There is currently no reference for the RAC recommended leafy vegetable consumption rate.

11. RAC states on page 27 of the draft Task 3 report that monitoring data do not provide particle size information. Since 1995, the Kaiser-Hill Team has been reporting, in the Quarterly Environmental Monitoring Report, air monitoring data from selected locations and time periods at the Site that contain size-segregated radionuclide concentrations, separated at about 9 to 10 micrometers. Has RAC evaluated this information as it relates to this parameter?

General Correspondence

RSALOP

Radionuclide Soil Action Level Oversight Panel



February 21, 2000

Ms. Patrice Bubar
Director, Office of Rocky Flats
U.S. Department of Energy – EM33
Cloverleaf Bldg. – Rm 2007
19901 Germantown Road
Germantown, MD 20874-1290

Dear Ms. Bubar:

We are pleased to announce that *Risk Assessment* Corporation has completed the technical review of the radionuclide soil action levels for the Rocky Flats Environmental Technology Site. The review was conducted over a period of 15 months under the oversight of the Radionuclide Soil Action Level Oversight Panel as well as a nationally recognized Peer Review Team that was contracted to provide critical assessment of key documents. Enclosed is a copy of *Risk Assessment Corporation's* Draft Final Task 5 Report/Project Conclusions as well as the project summary entitled Final Report: Technical Project Summary. The work was completed within the appropriated budget and is summarized in the following passage quoted from the final page of *RAC's* Final Project Summary Report:

> "*RAC's* task was to evaluate the RSALs adopted for Rocky Flats in 1996, to develop a methodology for independently determining RSALs, and to calculate RSALs for Rocky Flats by applying this methodology. We conclude that applying our method to the exposure scenarios approved by the Oversight Panel, using 15 mrem as a dose limit, and assuming a probability level of 10%, indicates a technically based RSAL for 239+240 Pu in soil at Rocky Flats of 35 pCi g^{-1}. For uranium, a technically derived RSAL using our methodology and assumptions would be 10 pCi g^{-1}.

The RSALOP hereby recommends that *RAC's* proposed RSALs for Rocky Flats of 35 picocuries per gram of soil for plutonium and 10 picocuries per gram of soil for uranium (calculated using the sum-of-ratios approach) be adopted as the RSALs for cleanup of the Rocky Flats site. The RSALOP further recommends that DOE adopt *RAC's* proposed guidelines for soil sampling protocols intended to support the final status survey by demonstrating that radionuclide concentrations in soil satisfy the established RSALs.

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Sincerely,

Hank Stovall

Hank Stovall, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow

Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:
RSALOP Members

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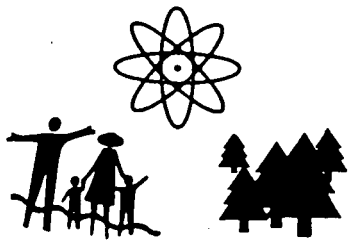
RSALOP

Radionuclide Soil Action Level Oversight Panel



February 21, 2000

Mr. Robert G. Card, President & CEO
Kaiser-Hill Co., LLC
Rocky Flats Environmental Technology Site
PO Box 464
Golden, CO 80402-0464

Dear Mr.Card:

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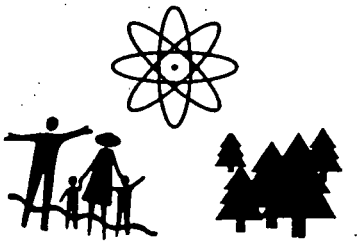

February 10, 2000

Mr. Paul Golan, Acting Manager
U. S. Department of Energy - Rocky Flats Field Office
10808 Highway 93 – Unit A
Golden, CO 80403-8200

Dear Mr. Golan:

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Original Signed By
Mary Harlow, Co-Chair
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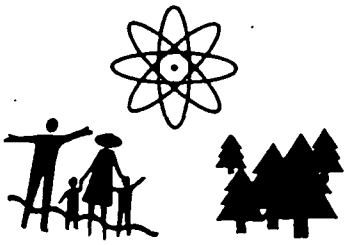

February 21, 2000

Mr. James Fiore
Deputy Acting Assistant Secretary for Environmental Restoration
U.S. Department of Energy - EM 40
1000 Independence Avenue, SW - Rm 5B050
Washington, DC 20585

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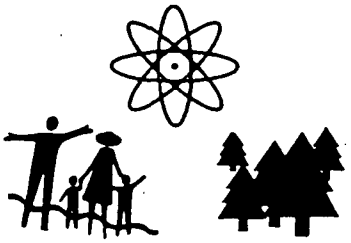

February 21, 2000

Mr. Brian Costner
Office of the Secretary of Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Forrestal Building – Rm. 7B-222
Washington, DC 20585

Dear Mr. Costner:

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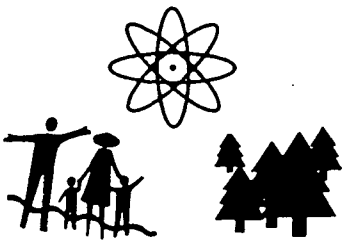

February 21, 2000

Congresswoman Diana DeGette
1400 Glenarm Place, Suite 202
Denver, CO 80202

Dear Representative DeGette:

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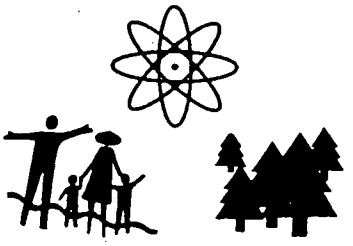

February 21, 2000

Honorable Ben Nighthorse Campbell
380 Senate Office Building
Washington, DC 20510

Dear Senator Campbell:

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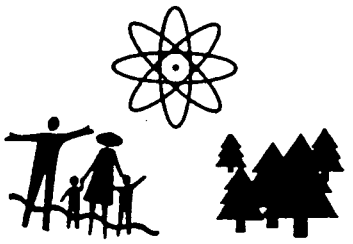

February 21, 2000

Honorable Wayne Allard
513 Hart Senate Office Building
Washington, DC 20510

Dear Senator Allard

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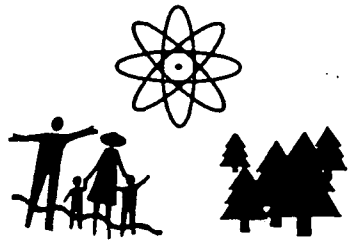

February 21, 2000

Bernie Morson
Rocky Mountain News
400 W. Colfax
Denver, CO 80204

Dear Bernie:

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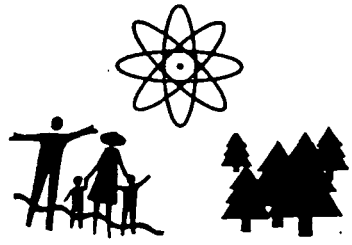

February 21, 2000

Dr. Carolyn L. Huntoon
Assistant Secretary for Environmental Management
U. S. Department of Energy – Rm. 5A-014
1000 Independence Ave, SW
Washington, DC 20585

Dear Dr. Huntoon:

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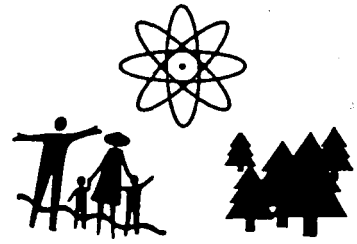

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James Owendoff
Principal Deputy Assistant Secretary – EM2
U. S. Department of Energy – Rm. 5A-014
1000 Independence Ave, SW
Washington, DC 20585

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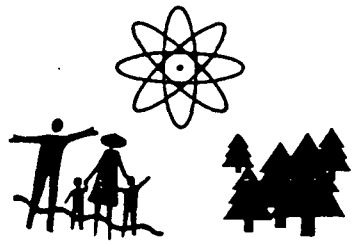
RSALOP

Radionuclide Soil Action Level Oversight Panel



February 21, 2000

Congressman Mark Udall
1333 W. 120th Avenue #210
Westminster, CO 80234

Dear Representative Udall:

We are pleased to announce that *Risk Assessment* Corporation has completed the technical review of the radionuclide soil action levels for the Rocky Flats Environmental Technology Site. The review was conducted over a period of 15 months under the oversight of the Radionuclide Soil Action Level Oversight Panel as well as a nationally recognized Peer Review Team that was contracted to provide critical assessment of key documents. Enclosed is a copy of *Risk Assessment Corporation's* project summary entitled Final Report: Technical Project Summary. The work was completed within the appropriated budget and is summarized in the following passage quoted from the final page of *RAC's* Final Project Summary Report:

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Thank you for considering our recommendations and *RAC's* reports. We look forward to working collaboratively with the Department of Energy, the Environmental Protection Agency and the Colorado Department of Public Health & Environment. Project conclusions will be presented to the community-at-large at the third public meeting scheduled for Thursday, March 23, 2000 from 7-9 p.m. at the Broomfield City Center – Council Chambers. We invite you to join us that evening.

Sincerely,

Hank Stovall, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:
RSALOP Members

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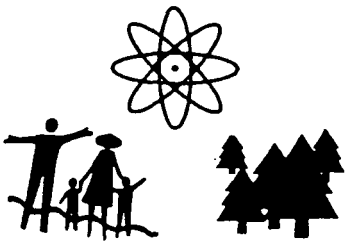
RSALOP

Radionuclide Soil Action Level Oversight Panel



February 21, 2000

David Skaggs
Hogan & Hartson
Columbia Square - 555 – 13th Street, NW
Washington, DC 20004

Dear Mr. Skaggs:

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On behalf of the Panel, we extend our appreciation to you for your assistance in getting this project underway back in 1997. We look forward to working collaboratively with the Department of Energy, the Environmental Protection Agency and the Colorado Department of Public Health & Environment. Project conclusions will be presented to the community-at-large at the third public meeting scheduled for Thursday, March 23, 2000 from 7-9 p.m. at the Broomfield City Center – Council Chambers. We invite you to join us that evening.

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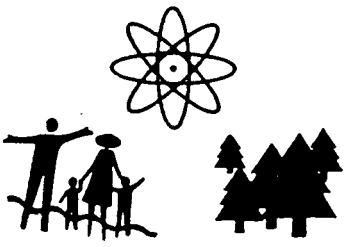
RSALOP

Radionuclide Soil Action Level Oversight Panel



February 21, 2000

Trent Seibert
The Denver Post
1560 Broadway
Denver, CO 80202

Dear Mr. Siebert:

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Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
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cc:
RSALOP Members

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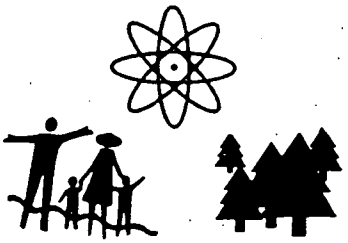
RSALOP

Radionuclide Soil Action Level Oversight Panel



February 21, 2000

Mike Patty
Rocky Mountain News
400 W. Colfax
Denver, CO 80204

Dear Mike:

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Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:
RSALOP Members

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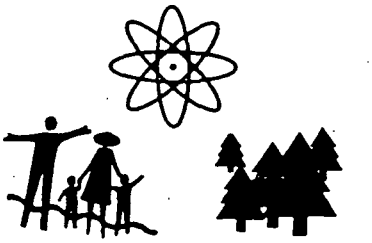
RSALOP

Radionuclide Soil Action Level Oversight Panel



February 21, 2000

Mr. Chuck Hensel
Neighborly News
4902 W. 103rd Place
Westminster, CO 80031

Dear Chuck:

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Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:
RSALOP Members

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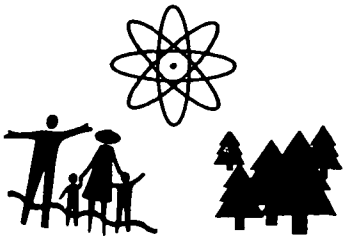
RSALOP

Radionuclide Soil Action Level Oversight Panel



February 15, 2000

Mr. Steve Gunderson
Colorado Department of Public Healtn & Environment - HMWM
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Dear Mr. Gunderson:

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Sincerely,

Original Signed By
Hank Stovall, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Original Signed By
Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:
RSALOP Members

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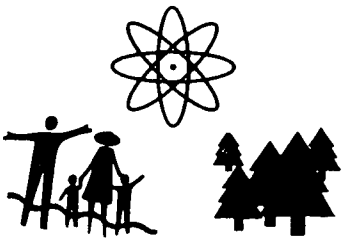

February 15, 2000

Mr. Timothy Rehder
U.S. Environmental Protection Agency
999 Eighteenth St. - Suite 500
Mail Stop 8EPR-F
Denver, CO 80202-2466

Dear Mr. Rehder:

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Original Signed By
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Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Original Signed By
Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:
RSALOP Members

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Risk Assessment Corporation
417 Till Road, Neeses, South Carolina 29107
phone 803.536.4883 fax 803.534.1995
www.racteam.com

January 24, 2000

Ms. Mary Harlow and Mr. Hank Stovall
Co-Chairmen, Radionuclide Soil Action Level Oversight Panel
c/o Anna Corbett AIMSI
5460 Ward Rd., Suite 370
Arvada, CO 80002

Dear Mary and Hank:

Throughout the course of this project, we have willingly participated in the important process of anonymous peer review. For the most part, the reviewers have presented their criticisms of our work in a professional manner, and our work has benefited greatly from this process. The reviewers have often come up with substantive suggestions for real improvement of our product, and we generally have appreciated the ideas brought forth in this manner.
We feel, however, that it is important to take this opportunity to register an objection about Reviewer C's use of exaggerated rhetoric, a generally impolite tone, and some pointedly uncivil remarks in the review of the Task 5 report and previous reviews of the *RAC* reports. We never object to critical discussion of our work, per se. Whether we agree or not with specific criticisms, they are most often useful in crafting a better product, and we give all of them serious consideration. But the style of Reviewer C's criticism often interferes with what should be its message, and it gives the distinct impression of bias, whether bias may be present or not.
We do not know why our work elicits such strident complaints from this reviewer. When we compare Reviewer C's comments with those of the other reviewers (which are at least as critical of the draft reports), we find in the cases of Reviewers A, B, D, and E appropriate, courteous, and thoroughly professional discussions that are generally useful in our revisions. Thus, it is hard to conclude that our admittedly preliminary work is as gravely flawed as Reviewer C's contemptuous tone tends to depict it.

As always, we respond to the substance contained in this reviewer's remarks, striving to separate potentially valid criticism from the pervasive negative tone. For example, in the Task 5 report, we take seriously the concern of this reviewer (and others, particularly Reviewer E) about the 15-mrem maximum annual dose limit as opposed to a criterion based on an explicit maximum lifetime risk. Similarly, the crude initial handling of the fire in the draft - for which this reviewer has exiled us from the community of credible uncertainty analysts - will be substantially improved, but the changes owe more to the cordially constructive recommendations of Reviewer A than to the deprecations of Reviewer C.

Since this was the last review to be expected from this individual, it is the panel's discretion regarding any action that may be needed. We thought it was important to note our concern in case there are further activities by the panel that may require review related to this work.

Sincerely,

John E. Till, Ph.D.
President

1879 Denver West Dr. - #1621
Golden, CO 80401
Business: 303.277.0753
Residence: 303.277.0747
Email: candftrvl@msn.com

Carla Sanda - Community Relations / Public Involvement

To:	Brian Costner – S1 – Rm. 7B-222	Fax:	202-586-7210
From:	Carla Sanda	Date:	1/18/00
Re:	POTENTIAL NAS REVIEW	Pages:	15 ~~14~~ including cover

Per your telephone conversation earlier today with the Radionuclide Soil Aciton Level Oversight Panel (RSALOP) Steering Committee, enclosed are copies of the following letters:

- December 6, 1999 Jessie Roberson letter to James Owendoff
- December 17, 1999 RSALOP Co-Chair Letter to James Owendoff
- December 26, 1999 Risk Assessment Corporation letter to RSALOP Co-Chairs
- January 10, 2000 City of Westminster letter to James Owendoff (w/enclosure)
- January 4, 2000 City of Broomfield letter to James Owendoff
- December 21, 1999 City of Arvada letter to James Owendoff

Please contact me at 303-277-0753 if I can be of further assistance.

DOE F 1325.8

United States Government **Department of Energy**

memorandum

Rocky Flats Field Office

DATE: DEC 0 6 1999

REPLY TO ATTN OF: AMEI:JJR:00709

SUBJECT: National Academy of Sciences Review of Soil Action Levels

TO: James Owendoff, Principal Deputy Assistant Secretary, EM-2

We recently spoke about the advisability of tasking the National Academy of Sciences (NAS) to review reports that are being generated by the Risk Assessment Corporation (RAC) on behalf of the Radionuclide Soil Action Level Oversight Panel (RSALOP). The Rocky Flats Field Office heartily endorses such an objective unbiased review, and we ask that you and your staff engage the NAS to accomplish this task.

As you are aware, the RAC recently issued its draft Task 5 Report. This report contains recommended soil action levels for actinides, which are in turn based upon the RAC's own exposure scenarios, the RAC's analysis of agency-generated scenarios, interpretations of relevant model parameters, and probability distributions. The Final Task 5 report will be issued in January. The RAC's final project report will be issued in March following public comment, peer review, and feedback from the Oversight Panel.

As the NAS conducts its review of the RAC's work products, the Rocky Flats Field Office (RFFO) asks that they address the following three areas:

1) A significant factor in RAC's calculations of a recommended RSAL is the potential of a prairie fire at Rocky Flats and its impact on soil resuspension. We ask that the NAS review the RAC's assumptions, modeling and analysis of the impact of a prairie fire on establishing safe levels of residual contamination at the Site.

2) The RAC has issued a draft recommendation of a soil action level for plutonium of 10 picoCuries per gram (pCi/g). We ask that the NAS investigate and report on the feasibility of implementing this standard (or the final standard recommended by the RAC or the RSALOP) at the Site. We are particularly interested in technical implementation issues, such as:

   - The amount of additional waste generated by cleaning to this level;
   - The ecological impact of cleaning to this level;
   - The increased worker risk of cleaning to this level;
   - The increased transportation risk posed by cleaning to this level (assuming all waste generated from clean up will be shipped to offsite locations;

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- The incremental cost of cleaning to this level; and
- The ability to reliably determine when such an action level has been met following cleanup.

3) Finally, we ask that the NAS provide their analysis of the additional net risk reduction that would be achieved by cleaning up to the RAC's proposed action level compared to those already in place for the Site. In formulating this analysis, we ask that the NAS consider the risks that would result from the additional cleanup, including worker risk, risk from increased traffic for waste shipment, and worker exposure. We feel that such an analysis would be particularly helpful in making policy decisions regarding any potential changes in the current soil action levels.

There may be other issues RFFO wishes the NAS to examine in the final report issued by the RAC and the RSALOP. If this is the case, RFFO will notify you. Additionally, we recognize that Headquarters may have other aspects of soil action levels and the RAC documents that it may wish the NAS to examine.

Please be assured the RFFO and its contractors will provide any needed information or other technical support to the NAS review. Thank you for your help in this matter.

If there are questions, please call me at (303) 966-2025.

Jessie M. Roberson
Manager

cc:
D. Lowe, OOM, RFFO
P. Golan, OOM, RFFO
J. Legare, AMEI, RFFO
J. Karpatkin, OOM, RFFO
J. Rampe, DAMEI, RFFO
R. McCallister, ER/WM, RFFO
D. Shelton, K-H
RSALOP members
J. Till, RAC
K. Korkia, RFCAB
D. Abelson, RFCLOG

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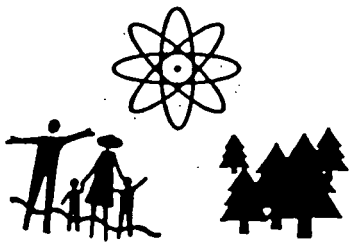
RSALOP

Radionuclide Soil Action Level Oversight Panel



December 17, 1999

James Owendoff
Principal Deputy Assistant Secretary – EM2
U. S. Department of Energy – Rm. 5A-014
1000 Independence Ave, SW
Washington, DC 20585

Dear Mr. Owendoff:

On behalf of the Radionuclide Soil Action Level Oversight Panel (Oversight Panel), we write to express concerns regarding a letter to you from Jessie Roberson, Manager of the Rocky Flats Environmental Technology Site. This letter, dated December 6, 1999, supported a National Academy of Sciences (NAS) review of reports generated on our behalf by *Risk Assessment Corporation*. We believe such a review is an unnecessary action that could result in prolonged delays to recommended modifications to the interim soil action levels. Moreover, it will needlessly waste taxpayer dollars. We were disturbed that the Oversight Panel was never consulted regarding a possible NAS review and indeed learned about the proposal only after Ms. Roberson's letter to you had already been sent.

As you are aware, the Oversight Panel was funded by the Department of Energy to conduct a community-directed, independent scientific assessment of interim radionuclide soil action levels that were incorporated into the Rocky Flats Cleanup Agreement on October 18, 1996. Work began on this review in October 1998 and is scheduled for completion in March 2000. The thirteen member Oversight Panel has carefully monitored this process to assure that it will result in a credible, scientifically based outcome. *Risk Assessment Corporation*, which was chosen from a field of contenders, has worked with the Panel and community-at-large every step of the way. Representatives from the Department of Energy, site contractors, and regulatory agencies have participated in all meetings and technical discussion sessions. *Risk Assessment Corporation* has not only invited their input but has responded to each and every concern and question they have raised. In addition, five nationally recognized technical experts have peer-reviewed reports issued by *Risk Assessment Corporation*. We believe this approach assures exactly what the Oversight Panel and DOE wanted, namely, a scientifically sound review of the soil action level calculations. We now find ourselves asking how many "reviews of reviews" are necessary before appropriate action is taken?

As a result, we strongly urge that the Department of Energy accept the results of *Risk Assessment Corporation*'s review as a starting point for further discussion with the Panel, the community-at-large, and the regulators for potential changes to the interim radionuclide soil action levels. Any further investigation is likely to lead to serious delays to a dangerous situation that can affect communities surrounding the Rocky Flats facility well into the new millennium.

If, however, the decision is made to proceed with an NAS review of *Risk Assessment Corporation's* work, the Oversight Panel insists that such a review include the following:

- A robust public participation process, similar to what we have had over the past year;
- A concurrent review of the work of DOE and its regulators to come up with the radionuclide soil action levels originally adopted for the facility;
- A completion date not later than March 31, 2001;
- Inclusion in the study of the relation of soil action levels on surface water runoff; and
- Appropriate compensation for Risk Assessment Corporation for extra work they may be required to perform to provide clarification and assistance throughout the review of their work.

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We urge you to examine the full final report of the independent study and to work with us as we seek to do the right thing for our communities. As stated at the beginning of this letter, we believe no additional review of this study is needed and that better use could be made of taxpayer dollars than continuing to study and re-study recommendations. If, on the other hand, you wish to proceed with plans for a National Academy of Sciences review, we ask that you and/or Assistant Secretary Carolyn L. Huntoon come to Colorado to meet with the Oversight Panel to respond to the set of expectations we have spelled out above.

Please feel free to contact either of us for further discussion. We look forward to a prompt response to our concerns.

Sincerely,

Original Signed By
Hank Stovall, Co-Chair (303) 466-5986
Radionuclide Soil Action Level Oversight Panel

Original Signed By
Mary Harlow, Co-Chair (303) 430-2400 - Ext. 2174
Radionuclide Soil Action Level Oversight Panel

cc:

U.S. DOE-HQ
C. L. Huntoon
J. Fiore
T. J. Glauthier
A. Rampertaap

U.S. DOE-RFFO
J. Roberson
P. Golan
J. Karpatkin
J. Rampe

Senator Wayne Allard
Senator Ben Nighthorse Campbell
Congressman Tom Tancredo
Congressman Mark Udall

Governor Bill Owens

Boulder County
Commissioner Paul Danish

Jefferson County
Commissioner Michelle Lawrence

City of Arvada
Hon. K. Fellman

City of Boulder
Hon. W. R. Toor

City of Broomfield
Hon. B. Berens

City of Louisville
Hon. T. Davidson

City of Westminster
Hon. N. Heil

Risk Assessment Corporation
Dr. John Till

Rocky Flats Citizens Advisory Board
Ken Korkia

Radionuclide Soil Action Level Oversight Panel Members

Risk Assessment Corporation
417 Till Road, Neeses, South Carolina 29107
phone 803.536.4883 fax 803.534.1995
www.racteam.com

December 26, 1999

Ms. Mary Harlow and Mr. Hank Stovall
Co-Chairs , Radionuclide Soil Action Level Oversight Panel
c/o Anna Corbett AIMSI
5460 Ward Rd., Suite 370
Arvada, CO 80002

Dear Mary and Hank:

I wanted to send this letter explaining our reaction to the proposed National Academy of Sciences (NAS) review of the Radionuclide Soil Action Levels Project (RSALOP) reports. Some of these points I made at the last meeting, but I thought it important to have these ideas documented.

Risk Assessment Corporation strongly supports the request for this research to be reviewed by the Academy. We believe such a review will focus much attention on innovative approaches to assessing the condition of such facilities as Rocky Flats, and that our recommendations in the Task 5 and other final project reports will lay groundwork for these new approaches. The NAS review will be an opportunity to have our new methods endorsed and could bring about substantial changes in future assessment methodologies for cleanup at Department of Energy sites. In our opinion, such changes are long overdue.

Our research at the Fernald and the Savannah River sites have been reviewed by an Academy committee, and we fully understand the thoroughness, time required, and credibility involved in the review process. We also understand the importance of having an opportunity to interact with the Academy committee during the review process and to respond to their comments, in the same way we have worked with the technical peer reviewers' comments on our reports during the project. This comment-response interchange is an important part of the scientific process, and the explicit agreement of the Department of Energy to our having this level of access to the Academy committee should be secured at the beginning. Our previous experience in working with the Academy makes us aware of several issues that could be crucial to the review process. They are the following:

1. Because of interaction that will be required between the Academy and our research team, we will need support to carry out this interaction with the Academy during the review process and to respond to comments that result from the review.
2. It is likely the Academy will have recommendations that could strengthen the methodology even further, and we would need support to incorporate these ideas into our work.
3. The RFSALOP should be aware that the NAS review process takes a considerable amount of time. Since the Department of Energy apparently has not yet formally requested NAS review it is possible that the entire process could take two years to complete. This time consideration is important for the oversight panel to recognize and for our staff to keep in mind in order to plan time accordingly in the future.

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4. We believe it is essential for the NAS also to include in its review the 1996 agency report, which proposed interim soil action levels for the Rocky Flats site. The NAS committee would need this perspective in order to understand fully the methodology we have proposed and the context of the contract under which we worked and by which we were constrained in important ways.
5. It will be critical for the NAS to have available all project task reports, not just the Task 5 report, to be able to check our methodology completely. The Task 6 report is an exception and could be omitted since it addresses a separate topic, that of recommending soil sampling criteria, and is not directly related to derivation of soil action levels.
6. In addition to the project reports, it is important for the NAS to have available all reviewers' comments and our responses to them . This information could save them valuable time, if questions arise about aspects of the work we were not able to address and our explanation as to why we did not address them.
7. It would be beneficial if the NAS could comment on the applicability and priority of the recommendations for additional work that we list in the Task 5 report. We believe such comments would offer helpful guidance to the Department of Energy in establishing research to support a viable agenda for future cleanup.

The RFSALOP should be prepared for an Academy review to contain many probing questions and comments, which individually or collectively may seem quite negative. But it is only through such questions and comments that relevant and fundamental issues are discussed and resolved. In our experience, the Academy committee's initial impressions can be quite different from its final understanding of the work under review, and the process of criticism and response inevitably leads to a sounder and more credible product. The public nature of the dialogue and the candor of the exchanges can seem unpleasant (or disturbing) to interested parties who are not familiar with the process. An initial critical report by the Academy committee can seem harsh and final, until there is time for a response that clarifies misunderstandings and proposes corrective or supplementary work where appropriate. Be assured that *RAC* does not view the process as a game to be won or lost, and we believe the Academy will not view it that way either. Rather, it must be viewed as a sometimes rocky path to a credible scientific basis for important public interest decisions that must balance competing costs and claims.

We thank the panel for their supportive and constructive comments during the course of the project. We believe we have responded fully to these ideas and agree that they have influenced our work substantially and helped create a much better product.

Sincerely,

John E. Till, Ph.D.
President

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WESTMINSTER

January 10, 2000

Mr. James Owendoff
Principal Deputy Assistant Secretary
U.S. Department of Energy, 5A014
1000 Independence Avenue SW
Washington, DC 20585

City of Westminster
Office of the
Council

4800 West 92nd Avenue
Westminster, Colorado
80031

303-430-2400
FAX 303-430-1809

Dear Mr. Owendoff:

On December 6, 1999, Jessie Roberson, former Rocky Flats Site Manager, forwarded a letter to you endorsing a National Academy of Science objective unbiased review of the reports that are being generated by the Risk Assessment Corporation (RAC) on behalf of the Radionuclide Soil Action Level Oversight Panel (RSALOP). Such a request by DOE for an NAS review would have been welcomed at the beginning of the Radionuclide Soil Action Level review process.

Westminster believes that a NAS review of RAC's work at this point in time is ill-timed, unwarranted and will only serve to further delay determining and setting an appropriate standard for the cleanup of plutonium and other radionuclides in the soil at Rocky Flats. If the Department of Energy supports and requests a NAS review, then all soil cleanup should be halted at Rocky Flats until the Academy has made its final determinations. This review can take up to two years and would serve to delay the accelerated cleanup and closure of Rocky Flats.

On May 16, 1997, the City of Westminster sent a letter (attached) to then Energy Secretary Federico Pena, Carol Browner, United States Environmental Protection Agency, and Alvin L. Alm, Assistant Secretary for Environmental Management, supporting the Rocky Flats Citizens Advisory Board's request for National Academy of Sciences to provide a review of the soil action level set for Rocky Flats and to set a national standard for radionuclides in soil. A NAS review in 1997 would have negated the need for the RAC review and could have saved the taxpayers $500,000. However, DOE took no action on the City or CAB's 1997 request.

The cities of Westminster and Broomfield, which lie down wind and downstream from the Rocky Flats Environmental Technology Site, were and continue to be very concerned about the interim standards set in 1996 by DOE for soil cleanup of plutonium at the site. Our communities worked together and expended a great deal of time and effort to obtain the DOE funded review of the interim radionuclide cleanup standards. Both cities have been very involved in the RSALOP review process. Representatives of our respective communities serve as co-chairs of the panel.

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In order to ensure that the RAC's reports and recommendations were credible, the RSALOP solicited community funds to provide a stipend for a peer review team of 5 nationally known experts in the field of radionuclides in soils to review and comment on every report that RAC has produced. The entire panel review process has been very professional and above reproach.

A great deal of time and money has been expended on the current review of the interim Radionuclide soil action level at Rocky Flats. Further expenditures of taxpayers dollars for an NAS review is viewed as a delay tactic in determining a Rocky Flats Radionuclide soil cleanup level that is protective of human health and the environment for future site users as well as offsite communities.

The City will look forward to your reply in this matter.

Sincerely,

Sam Dixon

Sam Dixion
Mayor Pro Tem

Cc: Governor Bill Owens, State of Colorado
Senator Wayne Allard
Senator Ben Nighthorse Campbell
Representative Mark Udall
Representative Tom Tancredo
Carolyn Huntoon, U.S. Department of Energy, EM
Paul Golan, U.S. Department of Energy, Rocky Flats Field Office
Mary Harlow, Rocky Flats Coordinator City of Westminster
Mayor and City Council, City of Westminster
Mayor Ken Fellman, City of Arvada
Rocky Flats Radionuclide Soil Action Level Oversight Panel
David Abelson, Rocky Flats Coalition of Local Governments

WESTMINSTER

May 16, 1997

The Honorable Federico Pena
Secretary of Energy
United States Department of Energy
1000 Independence Avenue SW
Washington, D.C. 20585

City of Westminster
Office of the
Mayor

4800 West 92nd Avenue
Westminster, Colorado
80030

303-430-2400
FAX 303-430-1809
TDD 303-428-0648

The Honorable Carol Browner
United States Environmental Protection Agency
Waterside Mall
401 M Street SW
Washington, D.C. 20460

Alvin L. Alm
Assistant Secretary for Environmental Management
United States Department of Energy
Forrestal Building
1000 Independence Avenue SW
Washington, D.C. 20585

Dear Secretary Pena, Administrator Browner, and Mr. Alm:

The City of Westminster is writing to support the request of the Rocky Flats Citizens Advisory Board (CAB) that both the United States Department of Energy (DOE) and the United States Environmental Protection Agency (EPA) initiate and fund a contract with the National Academy of Sciences to provide a review and set a national standard for radionuclides in soil. The EPA was in the process of promulgating such a national soil standard in 1996, but has since dropped its proposal. It is very important not only for our local community and adjacent communities, but the nation as a whole that a national standard that is protective of human health and the environment be studied and determined.

The DOE ruled on October 19, 1996, that a 15 millirem for industrial use and 85 millirem (651 Picocuries/gram) for residential was an appropriate cleanup standard for the Rocky Flats Environmental Technology Site (RFETS). This standard was subsequently adopted as an interim soil action level for the Rocky Flats Cleanup Agreement by the local Rocky Flats Field Office, the Colorado Department of Public Health and Environment, and the EPA. This interim standard is awaiting a final national determination of an appropriate protective dose level.

Local governments as well as stakeholders are not comfortable with the 85 millirem dose standard set in the buffer zone of the RFETS for residential use. The area where our City is located already has a higher background exposure from naturally occurring radiation and nuclear fallout. Additionally, the RESRAD model that was used to determine the soil action levels for Rocky Flats used breathing rates set for low altitude residents, rather than for a high altitude area such as ours in Colorado.

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Dollars spent for this review by both the DOE and EPA will result in renewed confidence in the ability of both agencies to protect the health and welfare of citizens who live in the shadow of the former nuclear production facilities. We believe that it is important that this review be undertaken as soon as possible.

Your support in this endeavor will be greatly appreciated.

Sincerely,

Nancy Heil

Nancy M. Heil
Mayor

cc: United States Senator Wayne Allard
United States Senator Ben Nighthorse Campbell
United States Representative David Skaggs
United States Representative Diana DeGette
United States Representative Dan Schaefer

City of Broomfield

OFFICE OF THE MAYOR

One DesCombes Drive • Broomfield, Colorado 80020 • Phone (303) 438-6300 • Fax (303) 438-6296

January 4, 2000

Mr. James Owendoff
Principal Deputy Assistant Secretary
U.S. Department of Energy, 5A014
1000 Independence Avenue SW
Washington, DC 20585

Dear Mr. Owendoff:

On December 6, 1999, Jessie Roberson, former Rocky Flats Site Manager, forwarded a letter to you endorsing a National Academy of Science (NAS) "objective unbiased" review of the reports that are being generated by the Risk Assessment Corporation (RAC) on behalf of the Radionuclide Soil Action Level Oversight Panel (RSALOP). Such a request by DOE for an NAS review may have been welcomed at the beginning of the Radionuclide Soil Action Level review process, so it could have proceeded in parallel and not in series with added, undefined time delays and costs.

The City of Broomfield believes that a NAS review of RAC's work at this point is ill-timed, unwarranted, and will only serve to further delay determining and setting an appropriate remediation level for the cleanup of plutonium and other radionuclides at Rocky Flats. If the Department of Energy supports and requests a NAS review, then all soil remediation and any other remediation activities which apply to the interim soil action levels should be halted immediately at Rocky Flats, until the NAS has made its determinations and an appropriate remediation level has been reviewed and agreed to by regulators, state and local governments, and community stakeholders.

This review would likely take two to five years, is a closed process and could therefore lack credibility in the local community, and would unnecessarily delay remediation and closure of Rocky Flats. It would also allow the site to continue to use the discredited and unacceptable interim remediation levels.

On May 16, 1997, the City of Westminster sent a letter to then Energy Secretary Federico Pena; Carol Browner, United States Environmental Protection Agency; and Alvin L. Alm, Assistant Secretary for Environmental Management, supporting the Rocky Flats Citizens Advisory Board's (CAB) request for the National Academy of Sciences to provide a review of the soil action level set for Rocky Flats and to set a national standard for radionuclides in soil. However, DOE took no action on the City's or CAB's 1997 request.

The cities of Broomfield and Westminster have assets and land holdings, including major water storage reservoirs downwind and downstream from the Rocky Flats Environmental Technology Site. We continue to be very concerned about the interim remediation levels set in 1996 by DOE for soil cleanup of plutonium at the site, since the model used does not quantify off-site impacts. As you may know, there have been on-site water quality exceedances and at least one off-site exceedance of the water release standard on Walnut Creek which drains into the Great Western Reservoir.

Our communities worked together and expended a great deal of time and effort to obtain the DOE funded independent review of the interim radionuclide soil remediation levels. Both cities have been very involved in the RSALOP review process. Representatives of our respective communities serve as co-chairs of this respected community based panel.

To ensure that the RAC's reports and recommendations were credible, the RSALOP solicited community funds to provide stipends for a peer review team of five nationally known experts in the field of radionuclides in soils to review and comment on every report that RAC has produced. Much of this peer review input has been incorporated into the final reports. The entire panel review process has been very professional, public, and above reproach.

A great deal of time and money has been expended on the current review of the interim radionuclide soil action level at Rocky Flats. We view further expenditures of taxpayer dollars for an NAS review as a delaying tactic in determining a Rocky Flats radionuclide soil cleanup level that provides long-term protection to human health and the environment for future site users and residents of adjacent off-site communities.

The City of Broomfield would appreciate a timely and responsive reply to this matter.

Sincerely,

Henry A. Stovall
Mayor Pro Tem

William M. Berens
Mayor

CC: Governor Bill Owens, State of Colorado
Senator Wayne Allard
Senator Ben Nighthorse Campbell
Representative Mark Udall
Representative Tom Tancredo

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Carolyn Huntoon, U.S. Department of Energy, EM
Paul Golan, U.S. Department of Energy, Rocky Flats Field Office
Mayor and City Council, City of Broomfield
Mayor Pro Tem Sam Dixion, City of Westminster
Mayor Ken Fellman, City of Arvada
Rocky Flats Radionuclide Soil Action Level Oversight Panel
Mary Harlow, Rocky Flats Coordinator City of Westminster
David Abelson, Rocky Flats Coalition of Local Governments

CITY OF ARVADA

OFFICE OF THE CITY MANAGER
303 431-3000 PHONE ▲ 303 431-3911 FACSIMILE
TDD: 303 431-3917

December 21, 1999

Mr. James Owendoff
Principal Deputy Assistant Secretary
Director of Site Operations
U.S. Department of Energy, 5A014
1000 Independence Avenue SW
Washington, DC 20585

Radionuclide Soil Action Level Review at Rocky Flats

Dear Mr. Owendoff:

The City of Arvada is a member of the Rocky Flats Radionuclide Soil Action Level Oversight Panel (RSALOP). We received a copy of the memorandum from Ms. Jessie M. Roberson to you of December 6, 1999 regarding the proposed National Academy of Sciences (NAS) review of soil action levels.

We support independent objective review of the reports prepared and being prepared by Risk Assessment Corporation (RAC) on behalf of the RSALOP, such as by the NAS, as discussed in Ms. Roberson's memorandum. We believe that the independent review by an organization such as NAS would provide valuable information to the U.S. Department of Energy as well as to the surrounding communities, concerned about safeguarding human health and the environment at Rocky Flats.

We have raised several concerns about the work currently being done by RAC. We hope that RAC will resolve the many technical concerns expressed by some RSALOP members and scientific peer reviewers.

On behalf of the City of Arvada, thank you for your continuing efforts on behalf of the safe and thorough cleanup of Rocky Flats. We look forward to our continued work together on this critical project.

Sincerely,

Carol E. Lyons

Carol E. Lyons
Rocky Flats Coordinator

cc: Mayor Ken Fellman
Council Member Lorraine Anderson
Rocky Flats Radionuclide Soil Action Level Oversight Panel
Paul Golan, U.S. Department of Energy, Rocky Flats Field Office
Carolyn Huntoon, U.S. Dept of Energy, EM
Senator Wayne Allard
Senator Ben Nighthorse Campbell
Representative Mark Udall
Representative Tom Tancredo
Governor Bill Owens

P.O. Box 8101 ▲ 8101 Ralston Road ▲ Arvada, Colorado ▲ 80001-8101

CITY OF ARVADA

OFFICE OF THE CITY MANAGER
303 431-3000 PHONE ▲ 303 431-3911 FACSIMILE
TDD: 303 431-3917

December 21, 1999

Mr. James Owendoff
Principal Deputy Assistant Secretary
Director of Site Operations
U.S. Department of Energy, 5A014
1000 Independence Avenue SW
Washington, DC 20585

Radionuclide Soil Action Level Review at Rocky Flats

Dear Mr. Owendoff:

The City of Arvada is a member of the Rocky Flats Radionuclide Soil Action Level Oversight Panel (RSALOP). We received a copy of the memorandum from Ms. Jessie M. Roberson to you of December 6, 1999 regarding the proposed National Academy of Sciences (NAS) review of soil action levels.

We support independent objective review of the reports prepared and being prepared by Risk Assessment Corporation (RAC) on behalf of the RSALOP, such as by the NAS, as discussed in Ms. Roberson's memorandum. We believe that the independent review by an organization such as NAS would provide valuable information to the U.S. Department of Energy as well as to the surrounding communities, concerned about safeguarding human health and the environment at Rocky Flats.

We have raised several concerns about the work currently being done by RAC. We hope that RAC will resolve the many technical concerns expressed by some RSALOP members and scientific peer reviewers.

On behalf of the City of Arvada, thank you for your continuing efforts on behalf of the safe and thorough cleanup of Rocky Flats. We look forward to our continued work together on this critical project.

Sincerely,

Carol E. Lyons

Carol E. Lyons
Rocky Flats Coordinator

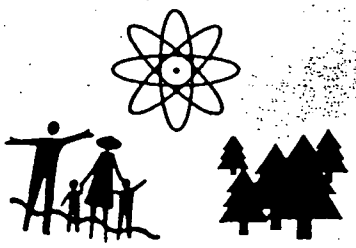
cc: Mayor Ken Fellman
Council Member Lorraine Anderson
Rocky Flats Radionuclide Soil Action Level Oversight Panel
Paul Golan, U.S. Department of Energy, Rocky Flats Field Office
Carolyn Huntoon, U.S. Dept of Energy, EM
Senator Wayne Allard
Senator Ben Nighthorse Campbell
Representative Mark Udall
Representative Tom Tancredo
Governor Bill Owens

95

P.O. BOX 8101 ▲ 8101 RALSTON ROAD ▲ ARVADA, COLORADO ▲ 80001-8101

RSALOP

Radionuclide Soil Action Level Oversight Panel



December 17, 1999

James Owendoff
Principal Deputy Assistant Secretary – EM2
U. S. Department of Energy – Rm. 5A-014
1000 Independence Ave, SW
Washington, DC 20585

Dear Mr. Owendoff:

On behalf of the Radionuclide Soil Action Level Oversight Panel (Oversight Panel), we write to express concerns regarding a letter to you from Jessie Roberson, Manager of the Rocky Flats Environmental Technology Site. This letter, dated December 6, 1999, supported a National Academy of Sciences (NAS) review of reports generated on our behalf by *Risk Assessment Corporation*. We believe such a review is an unnecessary action that could result in prolonged delays to recommended modifications to the interim soil action levels. Moreover, it will needlessly waste taxpayer dollars. We were disturbed that the Oversight Panel was never consulted regarding a possible NAS review and indeed learned about the proposal only after Ms. Roberson's letter to you had already been sent.

As you are aware, the Oversight Panel was funded by the Department of Energy to conduct a community-directed, independent scientific assessment of interim radionuclide soil action levels that were incorporated into the Rocky Flats Cleanup Agreement on October 18, 1996. Work began on this review in October 1998 and is scheduled for completion in March 2000. The thirteen member Oversight Panel has carefully monitored this process to assure that it will result in a credible, scientifically based outcome. *Risk Assessment Corporation*, which was chosen from a field of contenders, has worked with the Panel and community-at-large every step of the way. Representatives from the Department of Energy, site contractors, and regulatory agencies have participated in all meetings and technical discussion sessions. *Risk Assessment Corporation* has not only invited their input but has responded to each and every concern and question they have raised. In addition, five nationally recognized technical experts have peer-reviewed reports issued by *Risk Assessment Corporation*. We believe this approach assures exactly what the Oversight Panel and DOE wanted, namely, a scientifically sound review of the soil action level calculations. We now find ourselves asking how many "reviews of reviews" are necessary before appropriate action is taken?

As a result, we strongly urge that the Department of Energy accept the results of *Risk Assessment Corporation*'s review as a starting point for further discussion with the Panel, the community-at-large, and the regulators for potential changes to the interim radionuclide soil action levels. Any further investigation is likely to lead to serious delays to a dangerous situation that can affect communities surrounding the Rocky Flats facility well into the new millennium.

If, however, the decision is made to proceed with an NAS review of *Risk Assessment Corporation's* work, the Oversight Panel insists that such a review include the following:

- A robust public participation process, similar to what we have had over the past year;
- A concurrent review of the work of DOE and its regulators to come up with the radionuclide soil action levels originally adopted for the facility;
- A completion date not later than March 31, 2001;
- Inclusion in the study of the relation of soil action levels on surface water runoff; and
- Appropriate compensation for Risk Assessment Corporation for extra work they may be required to perform to provide clarification and assistance throughout the review of their work.

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We urge you to examine the full final report of the independent study and to work with us as we seek to do the right thing for our communities. As stated at the beginning of this letter, we believe no additional review of this study is needed and that better use could be made of taxpayer dollars than continuing to study and re-study recommendations. If, on the other hand, you wish to proceed with plans for a National Academy of Sciences review, we ask that you and/or Assistant Secretary Carolyn L. Huntoon come to Colorado to meet with the Oversight Panel to respond to the set of expectations we have spelled out above.

Please feel free to contact either of us for further discussion. We look forward to a prompt response to our concerns.

Sincerely,

Original Signed By
Hank Stovall, Co-Chair (303) 466-5986
Radionuclide Soil Action Level Oversight Panel

Original Signed By
Mary Harlow, Co-Chair (303) 430-2400 - Ext. 2174
Radionuclide Soil Action Level Oversight Panel

cc:

U.S. DOE-HQ
C. L. Huntoon
J. Fiore
T. J. Glauthier
A. Rampertaap

U.S. DOE-RFFO
J. Roberson
P. Golan
J. Karpatkin
J. Rampe

Senator Wayne Allard
Senator Ben Nighthorse Campbell
Congressman Tom Tancredo
Congressman Mark Udall

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Boulder County
Commissioner Paul Danish

Jefferson County
Commissioner Michelle Lawrence

City of Arvada
Hon. K. Fellman

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Hon. W. R. Toor

City of Broomfield
Hon. B. Berens

City of Louisville
Hon. T. Davidson

City of Westminster
Hon. N. Heil

Risk Assessment Corporation
Dr. John Till

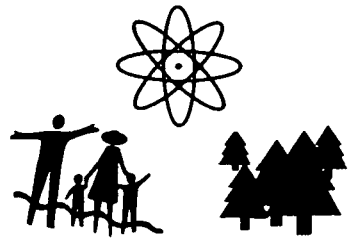
Rocky Flats Citizens Advisory Board
Ken Korkia

Radionuclide Soil Action Level Oversight Panel Members

99

RSALOP

Radionuclide Soil Action Level Oversight Panel



October 22, 1999

Jessie M. Roberson, Manager
U. S. Department of Energy - Rocky Flats Field Office
PO Box 928
Golden, CO 80402

Dear Jessie:

On behalf of the Radionuclide Soil Action Level Oversight Panel, we extend our congratulations on your recent nomination as a member of the Nuclear Defense Facilities Safety Board. Your experience throughout the Department of Energy complex will surely be an asset to the Board as it continues to address a myriad of serious issues.

As we approach this critical juncture and continue through to project completion, it is essential that we maintain a seamless transition with site officials to assure an ongoing understanding of this work and future decisions that may result from its conclusions. Therefore, we are requesting an opportunity to meet with you and your successor to discuss the project's status and plan together for the future.

The Panel appreciates your support of the ongoing technical study to review the radionuclide soil action levels for the Rocky Flats facility. As you are aware, the timeline for the study has been extended through March 31, 2000. It is not anticipated that any additional funds will be required; rather, the scheduled has simply been extended to provide *Risk Assessment Corporation* additional time to carefully review data and prepare the final report. The *Draft Task 5 Report: Independent Calculations* will be presented at the November 11 Panel meeting. This report will be the first look at proposed recommendations for the radionuclide soil action levels at Rocky Flats.

Thank you again for your support and consideration. We hope to hear from you soon regarding a time that will be convenient to meet.

Sincerely,

Original Signed By
Hank Stovall, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

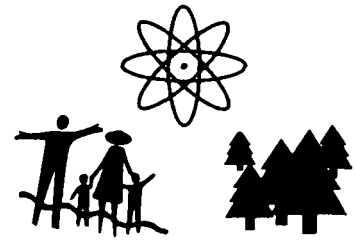
Original Signed By
Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:
RSALOP Members

100

RSALOP

Radionuclide Soil Action Level Oversight Panel



October 19, 1999

Mr. Greg Murray
Greg Murray and Associates
7737 Orion St.
Arvada, CO 80007

Dear Greg:

Thank you for attending the recent public meeting on the technical study being overseen by the Radionuclide Soil Action Level Oversight Panel. Your insights and comments were valuable and will be considered as we continue through the final phases of the project.

Per your request, enclosed is a copy of the agenda and video for the Radiation Detection & Instrumentation Workshop sponsored by the Panel on August 12, 1999. The video has not been professionally produced or edited; rather, it is simply the result of a video camera set up to capture the presentations and questions at the workshop.

The Panel appreciates your interest in this project. Please don't hesitate to contact me if I can provide any further information.

Sincerely,

Original Signed By

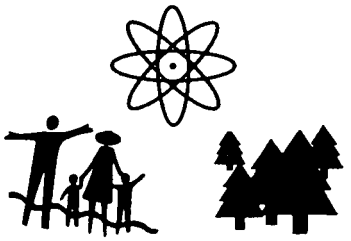
Carla Sanda
Advanced Integrated Management Services, Inc.
(303) 277-0753

Enclosures:
As Stated

101

RSALOP

Radionuclide Soil Action Level Oversight Panel



September 27, 1999

Padma Venkatesan
Tennessee Department of Environment & Conservation
761 Emory Valley Road
Oak Ridge, TN 367830

Dear Padma:

Thank you for your interest in the ongoing technical review of the radionuclide soil action levels at the Rocky Flats facility. The second public meeting was held on Wednesday, September 8 to update communities surrounding the facility on the progress and future goals of the project. One additional public meeting and press conference is scheduled at project completion to announce the outcome of the review.

I am enclosing a press packet with the following materials:

- Four project press releases
- Fact sheet entitled ***"Planning for Tomorrow...Radionuclide Soil Action Levels at Rocky Flats"***
- ***Project Update*** newsletter
- Meeting agenda
- Copy of Dr. John Till's presentation
- Copy of seven 24" x 36" storyboards designed to provide project basics

Please don't hesitate to contact me if I can provide additional information.

Sincerely,

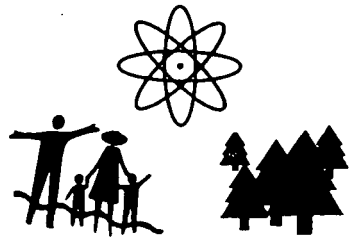
Carla Sanda
Project Administrator

Enclosures: As Stated

102

RSALOP

Radionuclide Soil Action Level Oversight Panel



August 31, 1999

Mr. David Ridenour
REV Engineering Services
6422 Quartz Avenue
Arvada, CO 80007

Dear David:

Thank you for your recent call regarding the ongoing technical review of the radionuclide soil action levels for the Rocky Flats site. Enclosed are the following materials for your review:

- Fact sheet entitled ***"Planning for Tomorrow...Radionuclide Soil Action Levels at Rocky Flats"***
- Task 1 Draft Final Report: Cleanup Levels at Other Sites
- Task 2 Draft Final Report: Cleanup Levels at Other Sites
- Task 3 Draft Report: Inputs & Assumptions
- Task 6 Draft Report: Sampling Protocols

Overall, the project is proceeding according to scope and schedule, but considerable work remains for the final months of the review. I hope you'll be able to attend our second public meeting being held Wednesday, September 8, from 7-9 p.m. at the Broomfield City Center – Council Chambers. Panel members and project technical contractor representatives will be on-hand to address any questions you may have. Please don't hesitate to contact me if I can provide any further information.

Sincerely,

Original Signed By

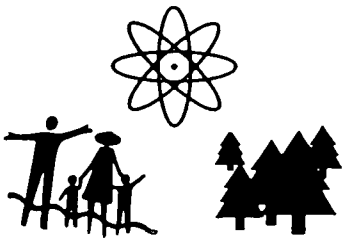
Carla Sanda
Advanced Integrated Management Services, Inc.
(303) 277-0753

Enclosures:
As Stated

103

RSALOP

Radionuclide Soil Action Level Oversight Panel



August 24, 1999

H. Bates Estabrooks
RMRS – Bldg. T130B, Rm. 2
Rocky Flats Environmental Technology Site
10808 Highway 93 – Unit B
Golden, CO 80403-8200

Dear Bates:

The Radionuclide Soil Action Level Oversight Panel (RSALOP) would like to express its appreciation for your willingness to participate in our Radiation Detection & Instrumentation Workshop on August 12, 1999. Your presentation not only provided valuable insights but answered many questions as well.

As you know, we taped the session so that it may be used as an educational tool not only for Panel members that were absent but also for other community members who express interest in this subject area. Be assured that the information you provided will assist us as we complete our important review of the interim radionuclide soil action levels that were set for the Rocky Flats Environmental Technology Site in 1996.

Once again, thank you for taking the time from your busy schedule to share your expertise and experience with the Panel.

Sincerely,

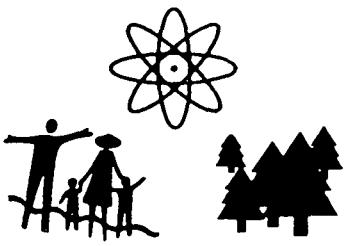
Hank Stovall, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

104

RSALOP

Radionuclide Soil Action Level Oversight Panel



August 24, 1999

Dennis Farmer
U.S. Environmental Protection Agency
Office of Air and Radiation
Radiation & Indoor Environments National Laboratory
PO Box 98517
Las Vegas, NV 89193-8517

Dear Dennis:

The Radionuclide Soil Action Level Oversight Panel (RSALOP) would like to express its appreciation for your willingness to participate in our Radiation Detection & Instrumentation Workshop on August 12, 1999. Your presentation not only provided valuable insights but answered many questions as well.

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Once again, thank you for taking the time from your busy schedule to share your expertise and experience with the Panel.

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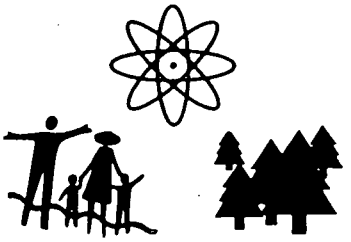
Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

105

RSALOP

Radionuclide Soil Action Level Oversight Panel



August 24, 1999

Larry Umbaugh
Canberra Industries – Bldg. T130B
Rocky Flats Environmental Technology Site
10808 Highway 93 – Unit B
Golden, CO 80403-8200

Dear Larry:

The Radionuclide Soil Action Level Oversight Panel (RSALOP) would like to express its appreciation for your willingness to participate in our Radiation Detection & Instrumentation Workshop on August 12, 1999. Your presentation not only provided valuable insights but answered many questions as well.

As you know, we taped the session so that it may be used as an educational tool not only for Panel members that were absent but also for other community members who express interest in this subject area. Be assured that the information you provided will assist us as we complete our important review of the interim radionuclide soil action levels that were set for the Rocky Flats Environmental Technology Site in 1996.

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Sincerely,

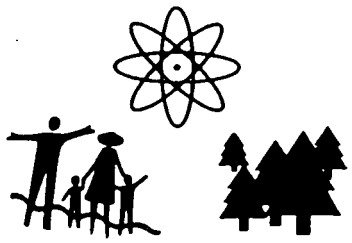
Hank Stovall, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

106

RSALOP

Radionuclide Soil Action Level Oversight Panel



August 24, 1999

Dave Shelton, Vice President-Environmental Systems
Kaiser-Hill
Rocky Flats Environmental Technology Site
10808 Highway 93 – Unit B
Golden, CO 80403-8200

Dear Dave:

The Radionuclide Soil Action Level Oversight Panel (RSALOP) would like to express its appreciation for your willingness to participate in our Radiation Detection & Instrumentation Workshop on August 12, 1999. Your presentation provided valuable insights on the Actinide Migration Panel's work to date.

As you know, we taped the session so that it may be used as an educational tool not only for Panel members that were absent but also for other community members who express interest in this subject area. Be assured that the information you provided will assist us as we complete our important review of the interim radionuclide soil action levels that were set for the Rocky Flats Environmental Technology Site in 1996.

Once again, thank you for taking the time from your busy schedule to share your expertise and experience with the Panel.

Sincerely,

Hank Stovall, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

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Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0920

JUN 18 1999

99-DOE-00035

Hank Stovall
City of Broomfield
One DeCombes Drive
Broomfield, CO 80020-2495

Dear Mr. Stovall:

Thanks for your letter of April 27, 1999, updating me on the status of the Radionuclide Soil Action Level Oversight Panel (RSAL) independent review.

I am pleased that the RSAL oversight panel (OP) and the Risk Assessment Corporation (RAC) are making steady progress on the review, and I share your goal of ensuring that the Rocky Flats Environmental Technology Site (Site) RSALs are protective of public health and the environment.

I appreciate the efforts by the RSAL OP to allow time for agency representatives to ask technical questions prior to and during the regular monthly sessions with the RSAL OP and the RAC. The RSAL OP is to be congratulated for your efforts to keep this project on track and to maintain an open, public process.

I understand that at a meeting with some Site staff June 10, 1999, you expressed concern that Department of Energy's (DOE's) practice of submitting written questions after each RSAL OP meeting is becoming burdensome. DOE will try to make better use of the technical work sessions and the public meetings to raise our questions and issues.

However, it is important to DOE to place our questions in writing and to receive written responses for our own records. DOE needs to understand in detail what RAC is recommending, the technical basis for these recommendations, and why RAC believes that its approach is superior to that of the Rocky Flats Cleanup Agreement parties. This kind of information is not easily forthcoming except through written questions and receipt of written documentation and responses. When the RSAL review process is complete, the DOE staff will carefully review the recommendations of RAC and of the RSAL OP. That review will need to be based not on oral recollection or handwritten notes, but on a more formal record of written questions and answers.

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Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402 0928

JUN 1 8 1999

99-DOE-00035

Mickey Harlow
City of Westminster
4800 West 92nd Avenue
Westminster, CO 80030

Dear Ms. Harlow:

Thanks for your letter of April 27, 1999, updating me on the status of the Radionuclide Soil Action Level Oversight Panel (RSAL) independent review.

I am pleased that the RSAL oversight panel (OP) and the Risk Assessment Corporation (RAC) are making steady progress on the review, and I share your goal of ensuring that the Rocky Flats Environmental Technology Site (Site) RSALs are protective of public health and the environment.

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Thanks again for your efforts on the RSAL review. I look forward to continuing to work with you.

Sincerely,

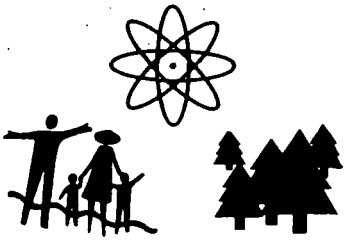
Jessie M. Roberson
Manager

cc:
J. Legare, EI, RFFO
R. McCallister, EI, RFFO

110

RSALOP

Radionuclide Soil Action Level Oversight Panel



June 14, 1999

Ms. Jesse Roberson, Manager
U. S. Department of Energy - Rocky Flats Field Office
PO Box 928
Golden, CO 80402

RE: BUDGET ALLOCATION TO ROCKY FLATS CITIZENS ADVISORY BOARD (RFCAB) FOR THE RADIONUCLIDE SOIL ACTION LEVEL OVERESIGHT PANEL

Dear Ms Roberson:

This letter is being forwarded to you at the request of the Radionuclide Soil Action Level Oversight Panel. The review of the interim radionuclide soil action levels has reached mid point. An essential element to timely completion of this project is the assurance of ongoing, uninterrupted administrative support. All necessary documentation has been provided for continued funding, which is simply an extension of services to match the duration of the project. As you will recall, the project was delayed a couple months due to problems with obtaining the necessary funding from the Department of Energy for the review consultant.

Ken Korkia, Board/Staff Coordinator for the Rocky Flats Citizens Advisory Board, serves as the project's funds administrator. Mr. Korkia has been working with Frazer Lockhart, DOE-RFFO Contracting Officer, to obtain these funds. However, no funds have yet been allocated for continuation of the project's Administrative Support contract with both Advanced Management Integrated Management Services, Inc. and Laura Till. It is absolutely essential that funds be in place by June 30, 1999 to ensure that this work is not interrupted or delayed in any way.

We would appreciate your assistance in obtaining these funds. If you would like to meet with us to discuss the administrative services contract we would be happy to do so. Please contact either of us if you should require any additional information or if you anticipate any delay in funds transfer. Thank you for your continued support and assistance in this important community review of the interim radionuclide soil action levels.

Sincerely,

Hank Stovall

Hank Stovall, RSALOP Co-Chair
303-466-5986

Mary Harlow

Mary Harlow, RSALOP Co-Chair
303-430-2400 – X2174

cc:
U.S. Department of Energy
Jeremy Karpatkin
Frazer Lockhart

RFCAB
Ken Korkia

RSALOP Members

111

Fax

To:	Jessie Roberson, DOE-RFFO	**From:**	Radionuclide Soil Action Levels Oversight Panel
Fax:	303-966-6054	**Date:**	June 14, 1999
Phone:	303-966-2025	**Pages:**	2 including cover
Re:	Funding for Admin Support	**CC:**	Jeremy Karpatkin, DOE-RFFO, 966-6633 Frazer Lockhart, DOE-RFFO, 966-8053 Ken Korkia, RFCAB, 420-7579

☑ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

SEE ATTACHED LETTER

112

Fax

To:	Jessie Roberson, DOE-RFFO	**From:**	Radionuclide Soil Action Levels Oversight Panel
Fax:	303-966-6054	**Date:**	June 14, 1999
Phone:	303-966-2025	**Pages:**	2 including cover
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☑ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

SEE ATTACHED LETTER

113

Fax

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Fax:	303-966-6054	**Date:**	June 14, 1999
Phone:	303-966-2025	**Pages:**	2 including cover
Re:	Funding for Admin Support	**CC:**	Jeremy Karpatkin, DOE-RFFO, 966-6633 Frazer Lockhart, DOE-RFFO, 966-8053 Ken Korkia, RFCAB, 420-7579

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SEE ATTACHED LETTER

14

Fax

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Fax:	303-966-6054	**Date:**	June 14, 1999
Phone:	303-966-2025	**Pages:**	2 including cover
Re:	Funding for Admin Support	**CC:**	Jeremy Karpatkin, DOE-RFFO, 966-6633 Frazer Lockhart, DOE-RFFO, 966-8053 Ken Korkia, RFCAB, 420-7579

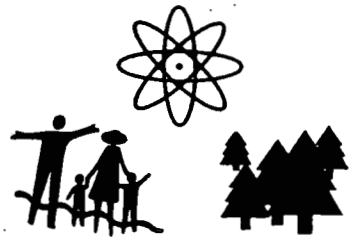
☑ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

SEE ATTACHED LETTER

115

RSALOP

Radionuclide Soil Action Level Oversight Panel



June 14, 1999

Frazer R. Lockhart
U. S. Department of Energy - Rocky Flats Field Office
PO Box 928
Golden, CO 80402

RE: BUDGET ALLOCATION TO ROCKY FLATS CITIZENS ADVISORY BOARD (RFCAB) FOR THE RADIONUCLIDE SOIL ACTION LEVEL OVERESIGHT PANEL

Dear Mr. Lockhart:

The Radionuclide Soil Action Level Oversight Panel is now approaching the midway point in its review of the Rocky Flats interim radionuclide soil action levels. An essential element to timely completion of this project is the assurance of ongoing, uninterrupted administrative support. At last week's Panel meeting, Ken Korkia, RFCAB, who serves as the project's funds administrator, announced that no funds had yet been allocated for continuation of the project's Administrative Support contract. All necessary documentation has been provided for continued funding, which is simply an extension of services to match the duration of the project.

It is absolutely essential that funds be in place by June 30, 1999. We are writing to request your support to be certain that this work is not interrupted or delayed in any way. Please contact either of us if you should require any additional information or if you anticipate any delay in funds transfer. Thank you for your assistance.

Sincerely,

Original Signed By

Hank Stovall, RSALOP Co-Chair
303-466-5986

Original Signed By

Mary Harlow, RSALOP Co-Chair
303-430-2400 – X2174

cc:
U.S. Department of Energy
Jeremy Karpatkin
Jessie Roberson

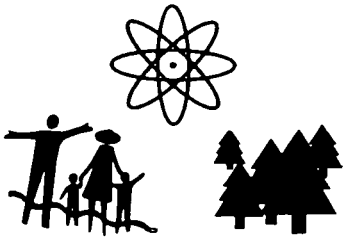
RFCAB
Ken Korkia

RSALOP Members

116

RSALOP

Radionuclide Soil Action Level Oversight Panel



June 4, 1999

Dr. Alexander Williams
U.S. Department of Energy – MS-EM42
Cloverleaf Building
19901 Germantown Road
Germantown, MD 20874-1290

Dear Dr. Williams:

Thank you for your assistance in obtaining the RESRAD codes for the current technical review of the interim radionuclide soil action levels being overseen by the Radionuclide Soil Action Level Oversight Panel (RSALOP). That material was helpful to *Risk Assessment Corporation* in its review of relevant computer models used to calculate soil action levels and will be critical as work begins to focus on specific scenarios used in the current study.

As we further discuss RESRAD and its potential use at Rocky Flats, numerous questions have emerged related to the original development and each subsequent revision and/or update of the software program. We are beginning to realize that in order to provide a thorough analysis and meaningful recommendations, it is important to the Panel and its technical contractor to fully understand issues such as:

- key parameters and associated rationale that may have been built into the code, and
- instructions provided to the code's developer related to objectives for code development.

To assure that there is no misunderstanding regarding original development and objectives, we are requesting your assistance in obtaining a copy of the original work plan or the request for proposal issued for the initial development of RESRAD, each subsequent RFP or workplan, and the associated costs expended for the original as well as each update. Any additional notes, direction or background information that may have been provided to the developer would also be helpful. Because of the project's short timeline, it is important that we receive this information as quickly as possible.

Overall, the project remains on schedule but with considerable work remaining. We appreciate your assistance and support of this project and look forward to hearing from you in the near future.

Sincerely,

Original Signed By
Hank Stovall, Co-Chair (303) 466-5986
Radionuclide Soil Action Level Oversight Panel

Original Signed By
Mary Harlow, Co-Chair (303) 430-2400 - Ext. 2174
Radionuclide Soil Action Level Oversight Panel

cc: DOE-RFFO
J. Karpatkin
R. McCallister
J. Roberson

RSALOP Members

117

June 4, 1999

Dr. Alexander Williams
U.S. Department of Energy – MS-EM42
Cloverleaf Building
19901 Germantown Road
Germantown, MD 20874-1290

Dear Dr. Williams:

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- key parameters that may have been built into the code,
- rationale used for specific input parameters,
- instructions provided to the code's developer related to objectives for code development.

To assure that there is no misunderstanding regarding original development and objectives, we are requesting your assistance in obtaining a copy of the original work plan or the request for proposal issued for the development of RESRAD. Any additional notes or background information that may have been provided to the developer would also be helpful. Because of the project's short timeline, it is important that we receive this information as quickly as possible.

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Sincerely,

Hank Stovall, Co-Chair (303) 466-5986
Radionuclide Soil Action Level Oversight Panel

Mary Harlow, Co-Chair (303) 430-2400 - Ext. 2174
Radionuclide Soil Action Level Oversight Panel

cc: DOE-RFFO
J. Karpatkin
R. McCallister
J. Roberson

RSALOP Members

118

Department of Energy
Germantown, MD 20874-1290

JUL 12 1999

Mr. Hank Stovall
Co-Chair
Radionuclide Soil Action Level Panel
c/o Advanced Integrated Management Services, Incorporated
5460 Ward Road, Suite 370
Arvada, Colorado 80002

Ms. Mary Harlow
Co-Chair
Radionuclide Soil Action Level Panel

Dear Mr. Stovall and Ms. Harlow:

I have received your letter dated June 4, 1999, in which you asked for various documents that relate to the Residual Radioactivity (RESRAD) computer code. These documents were requested as an aid in reviewing the soil action levels that have been established for remedial action at Rocky Flats. You specifically requested information on the "key parameters and associated rationale that may have been built into the code, and instructions provided to the code's developer related to objectives for code development."

The following documents are responsive to your request:

- Manual for Implementing Residual Radionuclide Material Guidelines using RESRAD, Version 5.0, Working Draft for Comment dated September 1993 (ANL/EAD/LD-2).

- Data Collection Handbook to Support Modeling the Impacts of Radionuclide Material in Soil, April 1993 (ANL/EAIS-8).

- Proceedings of the Workshop on Review of Dose Modeling Methods for Demonstration of Compliance with the Radiological Criteria for License Termination, Held at the U.S. Nuclear Regulatory Commission Offices in Rockville, Maryland, on November 13-14, 1997 (NUREG/CP-0163).

- A Draft "User's Guide" posted on the RESRAD web site.

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- External Exposure Model Used in the RESRAD Code for Various Geometries of Contaminated Soil, September 1998 (ANL/EAD/TM-84).
- Evaluation of the Area Factor Used in the RESRAD Code for the Estimation of Airborne Contaminant Concentrations of Finite Area Sources, July 1998 (ANL/EAD/TM-82).
- Analysis of BIOMOVS II Uranium Mill Tailings Scenario 1.07 with the RESRAD Computer Code, August 1997 (ANL/EAD/TM-66).
- Application of the RESRAD Computer Code to VAMP Scenario S, March 1997 (ANL/EAD/TM-70).
- RESRAD Benchmarking Against Six Radiation Exposure Pathway Models, October 1994 (ANL/EAD/TM-24).
- A Compilation of Radionuclide Transfer Factors for the Plant, Meat, Milk, and Aquatic Food Pathways and the Suggested Default Values for the RESRAD Code, August 1993 (ANL/EAIS, TM-103).
- Verification of RESRAD, Version 5.03, June 1994 (HNUS-ARPD-94-174).
- Benchmarking Analysis of Three Multimedia Models: RESRAD, MMSOILS, and MEPAS, November 1995 (DOE/ORO-2053).
- RESRAD Parameter Sensitivity Analysis, August 1991 (ANL/EAIS-3).
- DOE Order 5400.5, especially Chapter IV, "Residual Radioactivity."
- A Manual for Implementing Residual Radioactive Material Guidelines, June 1989 (ANL/ES-160 and DOE/CH/8901).

These documents provide the requested description of the code and parameters. Further, because of the flexibility with which RESRAD has been designed, most parameters are available to the user.

In the event that these documents have not been supplied to you, please advise me and they will be furnished. Several notes are also appropriate. The first manual (A Manual for Implementing Residual Radioactive Material Guidelines) is

out-dated and should be used only to see the changes made in RESRAD. Similarly, the 1991 RESRAD Parameter Sensitivity Analysis is a good example of how to conduct a sensitivity analysis, but the sensitivity of particular parameters differs with the radionuclide(s) and pathway(s) selected by the user.

You also requested information on workplans for RESRAD development. I enclosed the work plan for fiscal year 1999. Since the Department of Energy records are retired regularly, workplans for previous years are not readily available. However, all of the technical publications involving the model, parameters, and associated rationale are available, and the more important of these are listed above.

The soil action levels at Rocky Flats were established with RESRAD 5.61, some 15 years from the initial development of the code. It is not clear what the value is of documents dealing with general guidance and costs in developing RESRAD. It would be a significant amount of effort for us to search for 15 years of budgetary and direction documents for RESRAD, when the requested information on parameters and rationale is available from the published, available technical documents.

I appreciate very much your interest in RESRAD and I hope your review continues to work well.

Sincerely,

W. Alexander Williams, PhD
Health Physicist
Office of Eastern Area Programs
Office of Environmental Restoration

Enclosure

cc: A. Wallo, EH-412
H. Peterson, EH-412

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Williams Review

Department of Energy
Germantown, MD 20874-1290

DEC 4 1998

Dr. Charley Yu
Environmental Assessment Division
Argonne National Laboratory
9700 South Cass Avenue
Argonne, Illinois 60439

Dear Dr. Yu:

This letter is to provide program guidance for fiscal year (FY) 1999 for the RESidual RADioactivity (RESRAD) computer code and related activities. This direction is for funds from both the Office of Environmental Restoration (EM-40) and the Office of Environmental Guidance, subject to the allocation of funds. It has been prepared with the assistance of Messrs. Wallo and Peterson, and others. The Tasks and Descriptions are based on your FY 1999 RESRAD Program Tasks Proposal and are enclosed. They are summarized as follows:

Task #	Description	Funding: (in thousands) EH	EM
1	User Technical Support and code distribution	$ 0	$ 90
2	Training	0	0
2.1	RESRAD & RESRAD-Build Training Workshops	0	100
2.2	RESRAD-RECYCLE Training Workshop	0	75
2.2	Advanced training workshop	0	0
2.3	Workshops for managers	0	30
3	Independent Verification of RESRAD-Build	0	0
4	Guideline reports and Kd measurements	0	70
5	Update and maintain RESRAD Codes	0	0
5.1	Update and Maintain RESRAD and RESRAD-OFFSITE	30	75
5.2	Update and Maintain RESRAD-Build	50	20
5.3	Update and Maintain RESRAD-RECYCLE	0	110
5.4	Update and Maintain RESRAD-CHEM	0	0
5.5	Update and Maintain RESRAD BASELINE	0	0
5.6	Update and Maintain RESRAD-ECORISK	0	0
6	RESRAD and RESRAD-Build validation (BIOMASS, etc.)	50	30

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Task #	Description	Funding: (in thousands) EH	EM
7	Publish Manuals and reports	0	50
8	Technical Support to DOE	20	40
9	Web-based user resource center	0	10
Totals		**$ 150K**	**$ 700K**

The summary of the proposed activities is as follows:

Task 1.0 (Distribution of RESRAD family of codes and provide technical support to users) is approved at the requested $90K. It is expected that there will be a decreasing cost in code distribution and user support through use of lower cost (web-based or otherwise) distribution of codes and information.

Task 2.0 (Training Workshops) is funded at a reduced amount of $205K. The training workshops will be provided on an as directed, as needed basis. It is also anticipated that organizations requesting training will bear part of the cost of training, and all of the cost of advanced training workshops. The specific deliverable is the development of a RESRAD-RECYCLE training workshop by January 1, 1999, for delivery during January or February of 1999.

Task 3.0 (Independent Verification of RESRAD-Build) Funding limitations preclude this activity.

Task 4.0 (Guideline Reports and Kd Measurements) is funded at $70K. The output from this task will be guideline reports for specific DOE sites or Kd measurements on specific soils or conditions; deliverables will be on an as needed, as directed basis.

Task 5.1 (Update and Maintain RESRAD and RESRAD-OFFSITE) is funded at the level of $105K. This includes preparation of a draft manual ($25K), modifications to perform integrated dose calculations ($30K), and an overhaul of the uncertainty preprocessor for all of the RESRAD codes ($50K).

Task 5.2 (Update and Maintain RESRAD-Build) is funded at the level of $70K. This includes the preparation of a draft manual ($25K), code modifications to improve the shielding input ($15K), and code modifications to the reports ($30K).

Task 5.3 (Update and Maintain RESRAD-Recycle) is funded at the level of $110K. This includes preparation of a draft manual ($20K), code modifications to reduce the memory required ($10K), preparation for and participation in interagency meetings ($20K), and adding copper recycle ($60K).

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Task 5.4, 5.5, and 5.6 (Update and Maintain RESRAD-Chem, -Baseline, and -Ecorisk) are not funded because of limitations in funds.

Task 6.0 (Validation of RESRAD codes) is funded at $80K, above the requested $50K. The additional funding is to support participation a proposed Swedish effort to conduct validation of computer codes. An additional $30K from EM-40 has been allocated to this anticipated additional activity. The deliverables for these activities are trip reports and technical publications following participation in these activities.

Task 7.0 (Publish manuals and reports) is funded at the requested amount of $ 50K. It is expected that this cost will decrease as a result of manuals and reports being available via the web and that there will be a lower cost in publication of documents.

Task 8.0 (Technical support) is funded at $60K. The dose and risk calculations are included in Task 4 above. Deliverables are on an as requested, as needed basis.

Task 9.0 (Web-based RESRAD user resource center) is funded at $10K. While a web-based resource center is acceptable, the costs should be recovered from savings in other RESRAD activities, such as document publication and code distribution. Argonne National Laboratory should also work with the appropriate Office of Environment, Safety and Health (EH) staff for web-based distribution of RESRAD documents on the EH web page.

The goals of the RESRAD efforts are as follows and are in priority order: (1) continue support and distribution of the RESRAD, RESRAD-Build, and RESRAD-Recycle codes as the industry standard for radioactive site evaluation; (2) modify RESRAD, RESRAD-Build, and RESRAD-Recycle, as appropriate, to comply with changes in radiation protection policies and guidance; (3) conduct Training Workshops as needed; (4) apply RESRAD, RESRAD-Build, and RESRAD-Recycle, as requested, to site specific problems at the Department of Energy (DOE) or other facilities; and (5) develop, as directed, additional computer codes to meet DOE needs.

Funding from EM-40 consists of approximately $116K in carryover from FY 1998. Funding from the Office of Environmental Guidance includes $13.6K in carryover from FY 1998. Both the EM and EH carryover funding remains committed to FY 1998 tasks in progress, including publication of technical reports on the new Area Factor and direct exposure pathways in RESRAD by December 1, 1998.

FY 1999 funds in the amount of $700K for this activity will be provided, and $500K of this amount will be included in the December 1998 Approved Funding Program plan, under B&R code EX 02 MM 01, CID CHENG38.

Sanda

From: Sanda [redacted]
To: Sanda <[redacted]>
Sent: Thursday, August 19, 1999 10:02 AM
Subject: Re: RESRAD REPORTS

Dr Yu - Just checking in to get an update on the requested RESRAD reports. I'm not sure of your schedule, so the Co-Chairs just asked me to follow up with you to get an approximate time when we can expect the mailing. Many thanks - Carla Sanda 303-277-0753
----- Original Message -----
From: Sanda [redacted]
To: Charley Y[redacted]
Sent: Friday, July 30, 1999 5:40 AM
Subject: Re: RESRAD REPORTS

> Many thanks for the follow-up, Dr. Yu. I'll be meeting with the Co-Chairs
> on August 9 -- is it feasible to forward the reports to me for
distribution
> on that date? [redacted] I appreciate your
> assistance.
> -----Original Message-----
> From: Charley Yu <[redacted]>
> To: c[redacted]>
> Date: Thursday, July 29, 1999 11:56 PM
> Subject: Re: RESRAD REPORTS
> .
>
> >
> >I am currently on travel out of the country. I will send the reports you
> requested when I return to my office. Please provide mailing address.
> >
> >Charley Yu, Ph.D., CHP
> >RESRAD Program Manager
> >_____ Reply Separator _____
> >Subject: RESRAD REPORTS
> >Author: "Sanda" <[redacted]> at smtplink-eid
> >Date: 7/29/99 10:03 AM
> >Good Morning, Dr. Yu - I'm supporting the efforts of the Radionuclide
Soil
> >Action Level Oversight Panel technical review of the RSAL's at the Rocky
> >Flats facility. At the suggestion of Dr. Alexander Williams-DOE-HQ, the
> >Panel Co-Chairs would like to obtain copies of the following documents:
> >
> >External Exposure Model Used in the RESRAD Code for Various Geometries of
> >Contaminated Soil, September 1998 (ANL/EAD/TM-84)

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From: Anna Corbett <[redacted]
To: [redacted]
Cc: [redacted]
Date: Thursday, May 20, 1999 1:23 PM
Subject: FW: Anna, please forward this to RFSALOP Co-Chairs and note for your records

I have faxed a copy to Hank Stovall. Anna.

----Original Message----
From: Robert J. Kanick [[redacted]]
Sent: Wednesday, May 19, 1999 9:24 AM
To: Anna Corbett
Subject: Anna, please forward this to RFSALOP Co-Chairs and note for your records

To: Hank Stovall and Mary Harlow
RFSALOP Co-Chairs
From: Bob Kanick
Re: RFSALOP panel membership

Dear Mary and Hank,

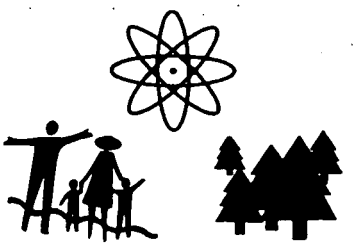
After having discussions with several of the people involved, I have decided that it is best that Victor Holm and I switch places on the panel. If there are no objections, as of the June panel meeting, Victor will be the panel member (local citizen representative) and I will be his alternate.

I do this because I believe that it is only proper and fitting that somebody as knowledgeable and dedicated to this issue as Victor is should be a member of the panel. I will be happy to continue my involvement as an alternate and look forward to the project's successful completion.

Sincerely,
Bob Kanick

RSALOP

Radionuclide Soil Action Level Oversight Panel



April 27, 1999

Jessie M. Roberson, Manager
U.S. Department of Energy – Rocky Flats Field Office
PO Box 928
Golden, CO 80402

Dear Ms Roberson:

The Radionuclide Soil Action Level Oversight Panel is now approaching the midway point in its review of the Rocky Flats interim radionuclide soil action levels. We would like to provide you with a brief update on the status and progress of the review.

Risk Assessment Corporation (RAC), the consultant that is conducting the review of the interim radionuclide standards, is on schedule and on budget. The Oversight Panel and *RAC* are committed to an open review process. Representatives of *RAC* continue to meet with both Panel and interested parties one hour prior to each month's regularly scheduled meeting and after each meeting. These extra time periods provide an excellent opportunity for delving into technical issues and getting questions answered that pop up after meetings.

The Department of Energy has several representatives attending not only the monthly Panel meetings but the discussion periods as well. Additionally, DOE sends a written list of questions to be answered by the RAC team every month. The provision of time before and after the meetings to answer questions is an effort to provide for more efficient use of study funds and limit the time necessary to answer long detailed questions.

The Oversight Panel's focus is on using our limited funds to address the scope of work and provide a credible review process. Our goal is not to discredit the Department of Energy or any other entity that was involved in setting the original interim standard. Our goal is to ensure that the Radionuclide soil action level set for the Rocky Flats Environmental Site, is protective of human health and the environment for onsite users as well as off-site uses for both the immediate and long-term future.

Task 1: Cleanup Levels at Others Sites has been completed. The final report will be distributed at the May 13 Panel meeting. The draft ***Task 2: Computer Models*** has also been completed and reviewed by the Peer Review Team. Board members are in the process of sending in their comments on this task and the final report will be completed and distributed at the July 8 meeting.

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Be assured that the Panel is working closely with *RAC* to ensure that all work items listed in the scope of work are accomplished as detailed in the RFP. We will provide you with periodic updates and personal copies of the final reports for each task listed under the scope of work.

We appreciate your support in this important review. Please feel free to contact either of us if you have any questions or would like additional information.

Sincerely,

Original Signed By
Hank Stovall, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Original Signed By
Mary Harlow, Co-Chair
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:

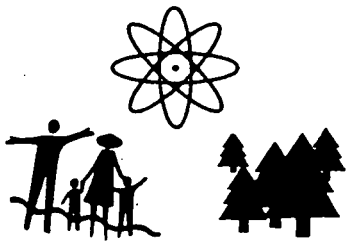
RSALOP

U.S. Department of Energy
Jeremy Karpatkin

128

RSALOP

Radionuclide Soil Action Level Oversight Panel



March 23, 1999

Mr. James Fiore
Deputy Acting Assistant Secretary for Environmental Restoration
U.S. Department of Energy - EM 40
1000 Independence Avenue, SW - Rm 5B050
Washington, DC 20585

Dear Mr. Fiore:

I appreciated the opportunity to talk to you about the radionuclide soil action level review at the March 8 meeting with DOE-HQ staff in Washington. Both of us are involved with an ever-broadening range of site-related issue, but nothing is more important to our communities than the current technical review of the interim radionuclide soil action levels being conducted by the Radionuclide Soil Action Levels Oversight Panel. *Risk Assessment Corporation* is conducting the technical review and has submitted both the Task 1 Report - *Cleanup Levels at Other Sites* and the Task 2 Report - *Computer Models* for panel review and comments. Both reports have been transmitted to our newly formed Peer Review Team.

The first of three public meetings was held on Wednesday, March 10, 1999 from 6:30 - 9:00 p.m. at the Westminster City Hall. The meeting was designed to introduce the project to local residents and invite their participation as we work through the remainder of the technical study. I am enclosing an information packet consisting of:

- Three project press releases
- Fact sheet entitled ***"Planning for Tomorrow...Radionuclide Soil Action Levels at Rocky Flats"***
- Meeting agenda
- Copy of Dr. John Till's presentation
- Copy of seven 24" x 36" storyboards designed to provide project basics

Overall, the project is right on schedule but with considerable work remaining. Panel members appreciate the support of site officials on this project and look forward to the final outcome in November 1999. We are adding your name to our mailing list to assure that you are kept informed of upcoming meetings and agenda items. Please don't hesitate to contact either Hank Stovall or myself if we can provide any further information.

Sincerely,

Hank Stovall cs

Hank Stovall, Co-Chair (303) 466-5986
Radionuclide Soil Action Level Oversight Panel

Mary Harlow cs

Mary Harlow, Co-Chair (303) 430-2400 - Ext. 2174
Radionuclide Soil Action Level Oversight Panel

Enclosures: As Stated

cc: RSALOP Members

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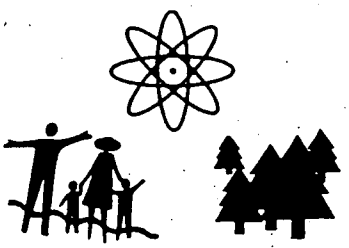
RSALOP

Radionuclide Soil Action Level Oversight Panel



March 23, 1999

Gary King, Policy Advisor to the Assistant Secretary
U.S. Department of Energy
Office of Environmental Management - EM 1
1000 Independence Avenue, SW - Rm 5A014
Washington, DC 20585

Dear Mr. King:

I appreciated the opportunity to talk to you about the radionuclide soil action level review at the March 8 meeting with DOE-HQ staff in Washington. Both of us are involved with an ever-broadening range of site-related issue, but nothing is more important to our communities than the current technical review of the interim radionuclide soil action levels being conducted by the Radionuclide Soil Action Levels Oversight Panel. *Risk Assessment Corporation* is conducting the technical review and has submitted both the Task 1 Report - *Cleanup Levels at Other Sites* and the Task 2 Report - *Computer Models* for panel review and comments. Both reports have been transmitted to our newly formed Peer Review Team.

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Sincerely,

Hank Stovall, Co-Chair (303) 466-5986
Radionuclide Soil Action Level Oversight Panel

Mary Harlow, Co-Chair (303) 430-2400 - Ext. 2174
Radionuclide Soil Action Level Oversight Panel

Enclosures: As Stated

cc: RSALOP Members

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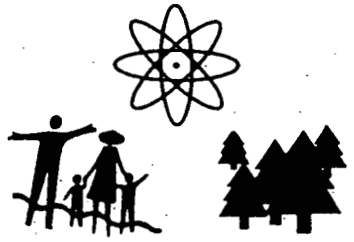
RSALOP

Radionuclide Soil Action Level Oversight Panel



March 23, 1999

T. J. Glauthier, Deputy Secretary Designate
Office of the Secretary
U. S. Department of Energy
1000 Independence Ave, SW - Rm 7A219
Washington, DC 20585

Dear Mr. Glauthier:

I appreciated the opportunity to talk to you about the radionuclide soil action level review at the March 8 meeting with DOE-HQ staff in Washington. Both of us are involved with an ever-broadening range of site-related issue, but nothing is more important to our communities than the current technical review of the interim radionuclide soil action levels being conducted by the Radionuclide Soil Action Levels Oversight Panel. *Risk Assessment Corporation* is conducting the technical review and has submitted both the Task 1 Report - *Cleanup Levels at Other Sites* and the Task 2 Report - *Computer Models* for panel review and comments. Both reports have been transmitted to our newly formed Peer Review Team.

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Sincerely,

Hank Stovall cs
Hank Stovall, Co-Chair (303) 466-5986
Radionuclide Soil Action Level Oversight Panel

Mary Harlow cs
Mary Harlow, Co-Chair (303) 430-2400 - Ext. 2174
Radionuclide Soil Action Level Oversight Panel

Enclosures: As Stated

cc: RSALOP Members

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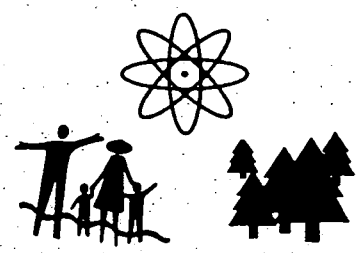
RSALOP

Radionuclide Soil Action Level Oversight Panel



March 23, 1999

Ms. Paula Elofson-Gardine
Environmental Information Network
8470 W. 52nd Place - Suite 9
Arvada, CO 80002-3447

Dear Paula:

It was a pleasure speaking with you regarding the recent public meeting sponsored by the Radionuclide Soil Action Levels Oversight Panel (RSALOP). This was the first of three public meetings planned for this project between now and completion of the technical study in November 1999. Per our discussion, I am enclosing the following materials:

- Press packet containing 3 press releases, copies of meeting presentation materials, meeting agenda, and fact sheet entitled ***"Planning for Tomorrow...Radionuclide Soil Action Levels at Rocky Flats"***
- Copy of the final contract for services between the Rocky Flats Citizens Advisory Board and *Risk Assessment Corporation* for the technical review of the interim radionuclide soil action levels established for Rocky Flats
- Copy of the Task 1 draft report entitled "Task 1: Cleanup Levels at Other Sites"

Overall, the project is right on schedule but with considerable work remaining. Please don't hesitate to contact me if I can provide any further information.

Sincerely,

Carla Sanda
Advanced Integrated Management Services, Inc.
(303) 277-0753

Enclosures:
As Stated

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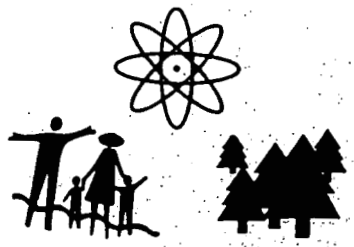
RSALOP

Radionuclide Soil Action Level Oversight Panel



March 23, 1999

Mr. Edward Bentz
E. J. Bentz & Associates
7915 Richfield Road
Springfield, VA 22153

Dear Mr. Bentz:

We have heard about the work you are doing with the Nevada Risk Assessment/Management Program Peer Review Team regarding radionuclide soil action levels (RSALs) at the Nevada Test Site. As you are probably aware, after months of negotiations, the Department of Energy at Rocky Flats has funded a community-directed, independent scientific assessment of the RSALs for the Rocky Flats Environmental Technology Site. To provide oversight of the study, a panel of thirteen community representatives was formed, known officially as the Radionuclide soil Action Levels Oversight Panel (RSALOP).

Last fall, the Panel hired *Risk Assessment Corporation* (*RAC*) to conduct the technical review. Work is progressing well, and *RAC* has submitted the Task 1 Report - *Cleanup Levels at Other Sites* for Panel review and comments, as well as the Task 2 Report - *Computer Models*, which has been delivered to Panel Members and the newly formed Peer Review Team for comments. Overall, the project is right on schedule but with considerable work remaining.

The first of three public meetings was held on Wednesday, March 10, 1999 from 6:30 - 9:00 p.m. at the Westminster City Hall. The meeting was designed to introduce the project to local residents and invite their participation as we work through the remainder of the technical study. We are enclosing an information packet distributed at the meeting consisting of:

- Three project press releases
- Fact sheet entitled ***"Planning for Tomorrow...Radionuclide Soil Action Levels at Rocky Flats"***
- Meeting agenda
- Copy of Dr. John Till's presentation
- Copy of seven 24" x 36" storyboards designed to provide project basics

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Although a myriad of issues surrounds the Rocky Flats site, none is more critical to current and future residents than the outcome of this technical study. Since you are engaged in a similar effort, we would appreciate any information you can provide regarding the ongoing effort at the Nevada Test Site.

We look forward to hearing from you. If we can provide any additional information regarding this project, please don't hesitate to contact either of us.

Sincerely,

Hank Stovall, Co-Chair cs
Radionuclide Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair cs
Radionuclide Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

Enclosures:
As Stated

cc:
RSALOP Members

Carla Frank Sanda

From: Erin Rogers [erogers@rfcab.org]
Sent: Wednesday, March 10, 1999 8:52 AM
To: Carla & Frank Sanda
Subject: RE: misc

Here's the contact info:
Their project is the Nevada Risk Assessment/Management Program (NRAMP) Peer Review Team

E.J. Bentz & Associates
7915 Richfield Road
Springfield, VA 22153
(703) ~~456-7469~~

Alexandria, VA
703-922-2105

I've left a phone message to get their fax number.

Erin Rogers
Rocky Flats Citizens Advisory Board staff
9035 Wadsworth Pkwy, Suite 2250
Westminster, CO 80021
303-420-7855, Fax 303-420-7579
www.rfcab.org

Edward Bentz

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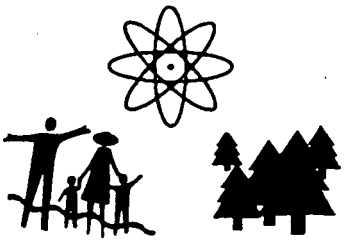
RSALOP

Radionuclide Soil Action Level Oversight Panel



March 19, 1999

Mr. David Thomassen
U.S. Department of Energy - SC-72
19901 Germantown Road
Germantown, MD 20874-1290

Dear Mr. Thomassen:

We were very happy to obtain information on the project that has been undertaken for the much-needed study regarding the potential health effects of low level radiation at the cellular level. We encourage you to provide an opportunity for public involvement and input throughout this process and would welcome the opportunity to be involved with this important study.

Both of us are involved with an ever-broadening range of site-related issues. However, nothing is more important to our community than the current technical review of the interim radionuclide soil action levels being conducted by the Radionuclide Soil Action Level Oversight Panel (RSALOP). The interim soil action levels for radionuclides at the Rocky Flats Environmental Technology Site were questioned by the citizens, environmental groups and local governments as soon as they were adopted. The public outcry resulted in then-Congressman David Skaggs supporting the communities' request for a Department of Energy-funded review of the soil action levels. The Radionuclide Soil Action Level Oversight Panel was formed to perform the review. The Panel consists of 13 members from the scientific community, including seven local governments, special interest groups and concerned citizens. Risk Assessment Corporation is completing the scientific technical review of the interim radionuclide soil action levels. The project is currently on schedule and within budget. Expected completion date is October 1999, with the final report being issued in November.

Enclosed you will find copies of both the Task 1 Report - *Cleanup Levels at Other Sites* and the Task 2 Report - *Computer Models* for panel review and comments. Our nationally known Peer Review Team is currently reviewing both reports. We are also enclosing an information packet distributed at our recent public meeting consisting of:

- Three project press releases
- Fact sheet entitled ***"Planning for Tomorrow...Radionuclide Soil Action Levels at Rocky Flats"***
- Meeting agenda
- Copy of Dr. John Till's presentation
- Copy of seven 24" x 36" storyboards designed to provide project basics

We look forward to learning more about your study and hope that you will provide us regular updates and information that we can pass on to the RSALOP. Please don't hesitate to contact either of us for further information.

Sincerely,

Hank Stovall, Co-Chair (303) 466-5986
Radionuclide Soil Action Level Oversight Panel

Mary Harlow, Co-Chair (303) 430-2400 - Ext. 2174
Radionuclide Soil Action Level Oversight Panel

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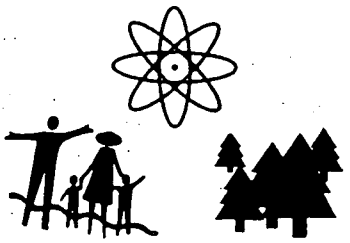
Enclosures: As Stated
cc: RSALOP Members

RSALOP

Radionuclide Soil Action Level Oversight Panel



March 2, 1999

Jessie M. Roberson, Manager
U. S. Department of Energy - Rocky Flats Field Office
PO Box 928
Golden, CO 80402

Dear Jessie:

Work is progressing well on the technical review of the radionuclide soil action levels. *Risk Assessment Corporation* has submitted the Task 1 Report - *Cleanup Levels at Other Sites* for Panel review and comments. The Task 2 Report - *Computer Models* is forthcoming and will be transmitted to our newly formed Peer Review Team on March 12. Overall, the project is right on schedule but with considerable work remaining.

We would like to invite you to our first public meeting scheduled for Wednesday, March 10, 1999 from 6:30 - 9:00 p.m. at the Westminster City Hall. Enclosed is a copy of the agenda for your review. We look forward to introducing the project to the community at large and inviting their participation as we work through the remainder of the technical study. Informational materials have been developed to provide a brief project background to meeting attendees, including the enclosed fact sheet entitled *Planning for Tomorrow...Radionuclide Soil Action Levels at Rocky Flats.*

Panel members appreciate your support of their work on this project and hope that you can join us next week. We look forward to seeing you then!

Sincerely,

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

Enclosures:
As Stated

cc:
RSALOP Members

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Jill M. Weber *Scientific Consulting, Inc.*

January 19, 1999

To: Jeremy Karpatkin
United States Department of Energy
Rocky Flats Field Office
P.O. Box 928
Golden, Colorado 80402-0928

Re: Plutonium solubility references

Mr. Karpatkin:

I would like to request copies of the references used by your staff to determine solubility of plutonium at the Rocky Flats Environmental Technology Site for the calculation of soil action levels using RESRAD. We intend to use these references, in combination with some of our own, to research plutonium solubility for our independent calculation of soil action levels at the RFETS.

I was also made aware at the January 14, 1999 Oversight Panel meeting of some on-going studies at the site regarding plutonium in soil. As results from these studies become available, we would like to request that copies be sent to *RAC* representatives as well as Oversight Panel co-chairs. This information may prove to be very helpful in our calculations and in future work the panel may undertake.

Additionally, we would like to request a copy of EPA's draft 40CFR196. Since this document was never finalized and is no longer in use at the EPA, it is not available to us through traditional channels.

Thank you for your assistance in this matter.

Sincerely,

Original signed by:
Jill M. Weber,
Consultant to *Risk Assessment Corporation*

Cc:
Russell McCallister, DOE
John Corsi, Kaiser-Hill
Hank Stovall, Rocky Flats Soil Action Level Oversight Panel Co-Chair
Mary Harlow, Rocky Flats Soil Action Level Oversight Panel Co-Chair

4904 S. Oxbow Avenue #212 *(605) 361-4471 FAX (605) 361-4488*
Sioux Falls, SD 57106 *E-mail: jdub@sd.cybernex.net*

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CITY OF ARVADA

OFFICE OF THE CITY MANAGER
303 431-3000 PHONE ▲ 303 431-3911 FACSIMILE
TDD: 303 431-3917

December 21, 1998

Rocky Flats Radionuclide Soil Action Level Oversight Panel
c/o Mr. Ken Korkia
Rocky Flats Citizens Advisory Board
9035 Wadsworth Parkway, Suite 2250
Westminster, CO 80021

Re: Arvada Representative

Dear Rocky Flats Radionuclide Soil Action Level Oversight Panel:

Please change the alternate member of the Rocky Flats Radionuclide Soil Action Level Oversight Panel representing the City of Arvada from James McCarthy to Lydia Stinemeyer. Carol Lyons will continue to serve at the primary representative.

Ms. Stinemeyer's telephone number is 303-421-2550, ext. 3299. Her fax number is 303-431-3969.

Thank you.

Sincerely yours,

Craig G. Kocian
City Manager

CGK:rce

cc: Carol Lyons, Rocky Flats Coordinator
James McCarthy, Environmental Services/Water Quality Manager
Lydia Stinemeyer, Environmental Intern

P.O. BOX 8101 ▲ 8101 RALSTON ROAD ▲ ARVADA, COLORADO ▲ 80001-8101

B9

done
AKE
1/11/99

CITY OF BOULDER

CITY COUNCIL OFFICE

Will Toor, Mayor
Richard Lopez, Deputy Mayor
Dan Corson, Councilmember
Thomas Eldridge, Councilmember
Bob Greenlee, Councilmember
Spenser Havlick, Councilmember
Donald Mock, Councilmember
Lisa Morzel, Councilmember
Gordon Riggle, Councilmember

December 10, 1998

Ms. Mary Harlow, Co-Chair
Mr. Hank Stovall, Co-Chair
Rocky Flats Radionuclide Soil Action Level Oversight Panel
5460 Ward Road, Suite 370
Arvada, CO 80002

Dear Ms. Harlow and Mr. Stovall:

This letter authorizes Benita Duran, Assistant City Manager, to serve as the alternate to Councilmember Lisa Morzel on the Rocky Flats Radionuclide Soil Action Level Oversight Panel, per Boulder City Council direction.

You can reach Benita at:

City Manager's Office
City of Boulder
P.O. Box 791
Boulder, CO 80306
(p) 303/441-4205
(f) 303/441-4478

Please do not hesitate to contact me if you require any additional information.

Sincerely,

Ronald A. Secrist
City Manager

added 12/17/98 RKC

P.O. Box 791 • Boulder, Colorado 80306-0791 • (303) 441-3002 • Fax (303) 441-4478 • bcn.boulder.co.us/boulder

Rocky Flats Soil Action Levels Oversight Panel
Radionuclide Soil Action Level Oversight Panel

DATE: December 10, 1998

TO: Public Participation Focus Group

FROM: Rocky Flats Soil Action Levels Oversight Panel (RFSALOP)

SUBJECT: PROJECT UPDATE

After many months of rolling up our sleeves building the framework for the project, work has begun on the independent scientific review of the radionuclide soil action levels at Rocky Flats. *Risk Assessment Corporation (RAC)* was hired to conduct the study and kicked off their effort with a presentation to the RFSALOP at their October 8 meeting. As reflected on the enclosed Project Milestone recap, *RAC* has laid out a methodical approach to each of the tasks within the study and will brief the Panel at its regularly scheduled meetings held the second Thursday of each month.

One of the primary factors considered in contractor selection was their approach to public involvement. *RAC* has an excellent track record of involving and working with communities, and we have their full commitment to that approach throughout this project's duration. Concurrent with the launching of the technical study, the enclosed public involvement plan was developed and implemented.

Members of the panel were carefully selected to assure that a diverse group of individuals would work together to diligently represent the publics surrounding RFETS and are committed to working with *RAC* to involve and inform surrounding communities in this important effort. Monthly meetings are open to the pubic; in addition, three broader public information/input meetings will be conducted over the span of the study. The Panel will also work closely with municipalities, the Rocky Flats Citizens Advisory Board, and the Rocky Flats communications group to identify optimum channels for information sharing to our stakeholders.

All efforts will be planned to assure that our bottom line remains: to calculate an independent set of RSALs that may be used to safeguard the communities surrounding RFETS into the future. We appreciate the opportunity to update you on our efforts and will keep you posted on our progress. Please feel free to contact us.

Sincerely,

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

Enclosures: As Stated

cc:
U.S. Department of Energy
Jessie Roberson
Jeremy Karpatkin

RFSALOP Members

Dr. John E. Till, *Risk Assessment Corporation*

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ANNA: Please mail enclosed letter and public involvement strategy to following:

Rob Henneke
U.S. EPA, Region VIII
80EA
999 - 18th Street - Suite 500
Denver, CO 80202

Steve Tarlton
CDPHE
4300 Cherry Creek Drive South
Denver, CO 80246-1530

Nanette Neelan
Jefferson County
100 Jefferson County Parkway, Suite 5537
Golden, CO 80419

Jack Hoopes
Kaiser-Hill

John Corsi
Kaiser Hill

Mariane Anderson
DOE-RFFO

Deeanne Butterfield
RFLII

Carol Lyons
City of Arvada

November 19, 1998

Ms. DeAnne Butterfield, Executive Director
The Rocky Flats Local Impacts Initiative
5460 Ward Road, Suite 205
Arvada, CO 80002

Dear DeAnne:

On behalf of the Rocky Flats Soil Action Level Oversight Panel (RFSALOP) please extend our gratitude to the RFLII Board for their award of $10,000 towards a peer review of the Rocky Flats Soil Action Levels Project. This amount, combined with the $5,000 already allocated in the technical review contract will assure ongoing quality assurance checks and serve to enhance the project's overall credibility. The Panel has formed a Peer Review Subcommittee who has already begun work to identify and select a team of professionals to serve as the Peer Review Group.

We appreciate your support on this project and will continue to keep you informed of our progress.

Sincerely,

Original Signed By

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Original Signed By

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

Cc: RFSALOP Members

Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

NOV 12 1998

98-DOE-07960

Ms. Mary Harlow
City of Westminster
4800 West 92nd Avenue
Westminster, CO, 80030

Dear Ms. Harlow:

I am writing to inform you that effective immediately, Jeremy Karpatkin, Director, Office of Communications, is the official Department of Energy Rocky Flats Field Office representative to the Radionuclide Soil Action Levels (RSAL) Oversight Panel. He will replace Russell McCallister, who currently serves this role.

I am making this change because I believe that now that the contract for the independent review has been let and the study has begun, the Rocky Flats Environment Technology Site (Site) can take a step back from our role in this process to some degree. Russell, as a technical specialist in this area, will not be needed as much. Jeremy, as the Site's principle communications link with stakeholders and local governments, is the more appropriate person for the process from this time forward. Russell will still be involved in this process and will still attend meetings as needed.

Russell will still be the technical point of contact for the Radiological Assessment Corporation in getting specific information on the RSALs and for interactions with the Actinide Investigations, as stated in my letter of September 3 (enclosed).

Thank you for your ongoing efforts on this project.

Sincerely,

Jessie Roberson

Jessie M. Roberson
Manager

Enclosure

cc w/Enc:
Joe Legare, RFFO
Russell McCallister, RFFO
Dave Shelton, Kaiser-Hill
John Corsi, Kaiser-Hill
Steve Gunderson, CDPHE
Tim Rehder, EPA

Done
AMC

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October 8, 1998

Ms. DeAnne Butterfield, Executive Director
The Rocky Flats Local Impacts Initiative
5460 Ward Road, Suite 205
Arvada, CO 80002

Dear DeAnne:

We are pleased to announce that the Rocky Flats Soil Action Levels Oversight Panel (RFSALOP) has contracted with Risk Assessment Corporation to provide an independent assessment of the soil action levels recommended for Rocky Flats. The Department of Energy has provided $475,000 for this project. Work is scheduled to begin this month and should be completed by November 1999.

Funding for project peer review -- or ongoing project technical review -- remains an issue. Therefore, we are working to identify potential sources of funding for this effort. As reflected in the Minutes of the RFSALOP meeting held on September 24, 1998, there was some indication that some dollars remaining in the Rocky Flats Local Impacts Initiative 1998 budget may be available for peer review on this project. Needless to say, we would welcome any assistance that you may be able to provide.

We have enclosed a request for funds that recaps the key points relevant to peer review funding provided for discussion at your upcoming Board Meeting scheduled for October 22, 1998. Please feel free to contact either of us for further clarification. On behalf of the Panel, we extend our sincere appreciation for any assistance you may be able to provide for completion of this study.

Sincerely,

Original Signed By

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Original Signed By

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

Enclosures: As Stated

Cc: Ken Korkia, RFCAB Board/Staff Coordinator
RFSALOP Members

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RFSALOP

Rocky Flats Soil Action Levels Oversight Panel

REQUEST FOR FUNDING

BACKGROUND

The Rocky Flats Soil Action Levels Oversight Panel has awarded a contract in the amount of $475,000 to Risk Assessment Corporation (RAC) to conduct an independent assessment of the recommended standards for soil action levels at the Rocky Flats Environmental Technology Site. In an effort to assure ongoing quality assurance checks and to enhance overall project credibility, the RFSALOP has recommended that an ongoing independent peer review or technical review be conducted. Although the Department of Energy supports this technical review, there were no separate line items included to fund the effort. As a result, after careful review of each of the project's milestones with RAC representatives, it appears that the Panel must identify alternative sources to assure adequate funds for a thorough technical review effort.

APPROACH TO PEER REVIEW

The Panel has formed a Peer Review Subcommittee to develop a framework for the peer review effort, as follows:

A 5-member peer review group will be formed to provide expertise in the tasks outlined for the study's duration. Selection of the group will be based on the following criteria:

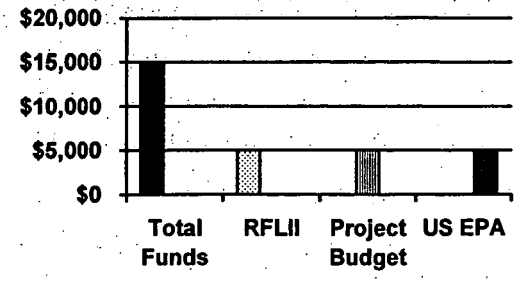
- Positive reputation and credibility within the scientific community;
- Expertise in the identified project tasks; i.e., radionuclide soil levels, analysis of RESRAD and/or other relevant computer programs; analyzing inputs/assumptions for radioactive soil action levels; assessing independent calculations for radioactive soil action levels; analysis of soil sampling protocols
- Minimal conflict of interest issues
- Ability to work within proposed timetable

Once the Peer Review Group has been formed, they will work closely with the Panel to review work plans, draft task reports and the draft final report.

PROPOSED BUDGET

It is anticipated that this effort will require a budget of ~$15,000 that will provide an honorarium of $1,500 per individual, as well as potential travel expenses. Of this, $5,000 has been allocated from the existing $475,000 contract awarded to the contractor. However, this results in the need to identify an additional $10,000 in funding. The Panel is approaching both the Rocky Flats Local Impacts Initiative and the U.S. Environmental Protection Agency with a request of $5,000 each to fully support this effort:

Proposed Budget Allocation



Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

SEP 3 1998

98-DOE-07931

Ms. Mary Harlow
City of Westminster
4800 West 92nd Avenue
Westminster, CO 80030

Dear Ms. Harlow:

Thank you for your letter of July 27 requesting agency points of contact for the Radionuclide Soil Action Level (RSAL) Oversight Panel's technical Oversight Contractor.

For the Rocky Flats Field Office (RFFO), your technical point of contact will be Russell McCallister. Russell can be reached at 966-9692 or by pager (888) 290-7952. Russell will be able to provide to your technical contractor information on RESRAD, access to the individuals who worked on developing the inputs for the RSALs, and other background information that may be relevant to their study. While Russell may not personally have all the information you may need, he will be able to provide access to it or to individuals who do have it.

For Kaiser-Hill, your point of contact will be John Corsi. John can be reached at (303)966-6526.

I recommend that you also identify similar technical points of contact with the Colorado Department of Public Health and Environment and the U. S. Environmental Protection Agency Region VIII, since these agencies were actively involved in developing the RSALs as well.

I request the contractor deal just with Russell and John so we can keep track of the interfaces and communications. Over time, Russell and John may determine that your contractors can deal with others on site directly for technical information.

It is my understanding that your technical review team will be seeking information on the assumptions behind the inputs and parameters the Department of Energy used in the RESRAD model, information on why RESRAD was chosen and other background information. It is my understanding that the vast majority of reports and information is available at the CAB. Therefore, the assistance from the site should be limited to [illegible] conversations with individuals who can provide additional information. I am not prepared

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to have RFFO staff actually develop new reports or develop additional analyses just for this study. I wish to be as cooperative and supportive of this review as possible, but I cannot authorize an unlimited expenditure of RFFO staff time and resources.

I hope this is helpful. I look forward to working with you, and to the results of your review.

Sincerely,

Jessie Roberson

Jessie M. Roberson
Manager

448

October 8, 1998

Mr. Tim Rehder
U. S. Environmental Protection Agency
999 Eighteenth St. - Suite 500
Mail Stop 8EPR-F
Denver, CO 80202-2466

Dear Tim:

We are pleased to announce that the Rocky Flats Soil Action Levels Oversight Panel (RFSALOP) has contracted with Risk Assessment Corporation to provide an independent assessment of the soil action levels recommended for Rocky Flats. The Department of Energy has provided $475,000 for this project. Work is scheduled to begin this month and should be completed by November 1999.

Funding for project peer review -- or ongoing project technical review -- remains an issue. Therefore, we are working to identify potential sources of funding for this effort. As reflected in the Minutes of the RFSALOP meeting held on September 24, 1998, you indicated that there may be a funding source for this effort within your agency. Needless to say, we would welcome any assistance that you may be able to provide.

We have enclosed a request for funds that recaps the key points relevant to peer review funding provided for discussion at your upcoming Board Meeting scheduled for October 22, 1998. Please feel free to contact either of us for further clarification. On behalf of the Panel, we extend our sincere appreciation for any assistance you may be able to provide for completion of this study.

Sincerely,

Original Signed By

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Original Signed By

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

Enclosures: As Stated

Cc: Ken Korkia, RFCAB Board/Staff Coordinator
RFSALOP Members

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RFSALOP

Rocky Flats Soil Action Levels Oversight Panel

REQUEST FOR FUNDING

BACKGROUND

The Rocky Flats Soil Action Levels Oversight Panel has awarded a contract in the amount of $475,000 to Risk Assessment Corporation (RAC) to conduct an independent assessment of the recommended standards for soil action levels at the Rocky Flats Environmental Technology Site. In an effort to assure ongoing quality assurance checks and to enhance overall project credibility, the RFSALOP has recommended that an ongoing independent peer review or technical review be conducted. Although the Department of Energy supports this technical review, there were no separate line items included to fund the effort. As a result, after careful review of each of the project's milestones with RAC representatives, it appears that the Panel must identify alternative sources to assure adequate funds for a thorough technical review effort.

APPROACH TO PEER REVIEW

The Panel has formed a Peer Review Subcommittee to develop a framework for the peer review effort, as follows:

A 5-member peer review group will be formed to provide expertise in the tasks outlined for the study's duration. Selection of the group will be based on the following criteria:

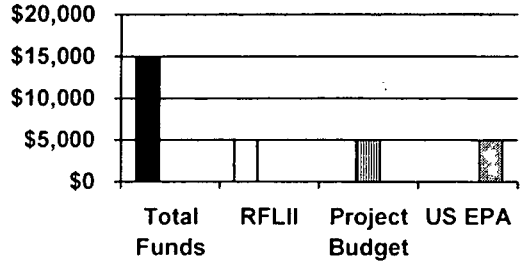
- Positive reputation and credibility within the scientific community;
- Expertise in the identified project tasks; i.e., radionuclide soil levels, analysis of RESRAD and/or other relevant computer programs; analyzing inputs/assumptions for radioactive soil action levels; assessing independent calculations for radioactive soil action levels; analysis of soil sampling protocols
- Minimal conflict of interest issues
- Ability to work within proposed timetable

Once the Peer Review Group has been formed, they will work closely with the Panel to review work plans, draft task reports and the draft final report.

PROPOSED BUDGET

It is anticipated that this effort will require a budget of ~$15,000 that will provide an honorarium of $1,500 per individual, as well as potential travel expenses. Of this, $5,000 has been allocated from the existing $475,000 contract awarded to the contractor. However, this results in the need to identify an additional $10,000 in funding. The Panel is approaching both the Rocky Flats Local Impacts Initiative and the U.S. Environmental Protection Agency with a request of $5,000 each to fully support this effort:

Proposed Budget Allocation



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August 25, 1998

Ms. DeAnne Butterfield, Executive Director
The Rocky Flats Local Impacts Initiative
5460 Ward Road, Suite 205
Arvada, CO 80002

Dear DeAnne:

We have received your letter dated August 4, 1998 requesting clarification of an issue reflected in the minutes of the July 23, 1998 meeting of the Rocky Flats Soil Action Level Oversight Panel (RFSALOP). Your concern seems to stem from a discussion point regarding the Panel's commitment to the final outcome of the Technical Support Contractor's review of the RESRAD model and any additional recommendations, if warranted by the review.

A key thing to remember when reviewing minutes distributed prior to the next meeting is that they are distributed in draft form, subject to review and final approval of the RFSALOP as a whole. In addition, minutes reflect a wide range of information to assure that key discussion points and opinions are captured -- even if particular issues are never adopted. The section of the minutes that you referred to dealt with a broader, overall discussion as to whether or not the Panel should document commitment to the final results of the review, regardless of the report's final outcome -- not on the Panel's intention to publish a separate report.

As clearly described in the Request for Proposal issued for the Technical Support Contractor, responsibility for the final report and any necessary recommendations rests with the contractor hired to perform the independent review. The report from the Contractor and associated recommendations will stand alone. The RFSALOP does, however, reserve the right to attach its own comments and recommendations to the report.

Members of the RFSALOP are committed to establishing a process that will result in unbiased, scientific recommendations, as well as one that will keep the concerns of the community at the forefront. To assure a clear understanding of the Panel's purpose, we are enclosing copies of the following materials, which describe the overall mission, goals and guidelines established for the RFSALOP: Member List and Overall Mission and Goals.

We appreciate the opportunity to respond to your concerns and hope that we have clarified the role and intentions of the RFSALOP in this important task.

Sincerely,

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

Enclosures: As Stated

Cc: Tom Marshall, RFCAB Chair
Jessie Roberson, USDOE-RFFO
RFSALOP Members
Congressman David Skaggs
Ken Korkia, RFCAB Board/Staff Coordinator

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ROCKY FLATS SOIL ACTION LEVEL OVERSIGHT PANEL

MEMBERSHIP/INTERESTED PARTIES

**	SURNAME	FIRST	ORGANIZATION
I	Abelson	David	Office of Congressman Skaggs
A	Balser	Heather	City of Louisville
I	Butterfield	DeAnne	Rocky Flats Local Impacts Initiative
I	Corsi	John	Kaiser-Hill
P	Davidson	Tom	City of Louisville
A	Dixion	Sam	City of Westminster
I	Fiore	Jim	U.S. Department of Energy - Headquarters
P	Goldfield	Joel	Colorado Coalition Against Nuclear War
A	Gray	Tiana	City of Boudler
E	Gunderson	Steve	State of Colorado
P	Harlow	Mary	City of Westminster
P	Heil	Dean	Colorado State University
A	Holm	Victor	Rocky Flats Citizens Advisory Board
P	Kanick	Bob	Rocky Flats Citizens Advisory Board
I	Karpatkin	Jeremy	U.S. Department of Energy - Rocky Flats
I	Korkia	Ken	Rocky Flats Citizens Advisory Board
P	Lyons	Carol	City of Arvada
P	Margulies	Todd	TM Consulting
A	Marshall	Tom	Rocky Flats Citizens Advisory Board
E	McAllister	Russell	U.S. Department of Energy - Rocky Flats
A	McCarthy	Jim	City of Arvada
P	Moore	LeRoy	Rocky Mountain Peace & Justice Center
I	Morin	Normie	Colorado Department of Public Health & Environment
P	Morzel	Lisa	City of Boulder
I	Neff	Will	Rocky Flats Local Impacts Initiative
I	Rampertaap	Autar	U.S. Department of Energy - Headquarters
E	Rehder	Tim	Environmental Protection Agency
I	Roberson	Jessie	U.S. Department of Energy - Rocky Flats
A	Schnoor	Kathy	City of Broomfield
P	Schonbeck	Niels	Metro State College
P	Selbin	Joel	University of Colorado - Denver
I	Shelton	Dave	Kaiser-Hill
A	Shepherd	John	Physicians for Social Responsibility
I	Spreng	Carl	Colorado Department of Public Health & Environment
P	Starr	Ken	Jefferson County
P	Stovall	Hank	City of Broomfield
A	Tayer	John	City of Boulder
F	Till	Laura	Facilitator
I	Wilson	Brady	Rocky Flats Citizens Advisory Board

**: P=Panel Member; A=Alternate; E=Ex-Officio;
I=Interested Party

Review of Radionuclides in Soils Cleanup Action Level Modelling
Final Draft Project Description
November 19, 1997

1.0 Project Description and Product

In light of recent events and reappraisal of the establishment of safe levels of residual plutonium in the Rocky Flats soils, the U.S. Department of Energy (DOE) has agreed to support and fund a community-based advisory group to oversee an independent evaluation of radionuclide soil action levels. The purpose of the project is to obtain an independent scientific determination of the appropriate model to be used to set a site specific soil action level for radionuclides in the soils at Rocky Flats and recommend changes appropriate for the protection of future on-site and off-site populations. The evaluation will be conducted and peer reviewed by acknowledged experts chosen by an independent oversight panel.

A thirteen member oversight panel will be formed and will consist of a combination of local government, federal and state regulators, environmental groups, technical experts and interested citizens. Over a twelve month period the group will, through CDPHE, contract with appropriate professional specialists to assess the appropriateness of the current RESRAD model and any alternative models. The panel will review the current model (RESRAD) as well as other available models and provide a determination of which model is most applicable to the Rocky Flats site. Specific attention will be given to the input parameters and the rationale of their use for setting a soil standard that is protective of future site users, including the potential impact to downwind communities and surface waters leaving the site.

Actinide Migration Panel findings will be taken into consideration when determining input parameters. Additionally, a review of standards that have been set both locally and nationally will be undertaken to determine if they have an application for setting a Rocky Flats Standard. The project will focus primarily on soil conditions on-site, and where appropriate will attempt to integrate the Actinide Panel's analysis of the movement, mobility and fate of radionuclides from on-site soils.

The results of this investigation and evaluation will be shared with the RFCA principals to provide additional guidance in revisions to soil action levels. An RFP will be issued and the panel, with the logistical assistance of CDPHE, will select a winning proposal and negotiate a final scope of work with the winning contractor.

2.0 Process and Administration

2.1 Project Administration

The interim group endorses the use of the Colorado Department of Public Health and Environment, through the office of the Rocky Flats Health Advisory Panel, to serve

as the administrative conduit for allocation of the monies, administration of the contract and secretarial and organizational requirements of the oversight panel.

2.2 Establishment of the Oversight Panel

The community-based oversight group shall be called the *Rocky Flats Radionuclide Soil Action Level Oversight Panel* and serve as volunteers. The Oversight Panel shall consist of the following members:

- Six members of local government. The members shall be self-selected by the consensus approval of interested local governments.
- Two members of the public interest community. Members shall be self-selected by the consensus approval of interested public interest groups.
- Three representatives from the Technical community to include one representative from the HAP. Representatives shall be selected by the interim Ad Hoc group after a public notice and review of candidates.
- Two members of the general public most impacted by Rocky Flats. Representatives shall be selected by the interim ad hoc group after a public notice and review of the candidates.
- Ex-officio members:

  U.S. Department of Energy
  U.S. Environmental Protection Agency
  Colorado Department of Public Health and Environment

An interim ad hoc group consisting of the following members will convene to guide creation of the full panel. The interim panel consists of the following representatives; City of Broomfield (Hank Stovall and Kathy Schnoor); City of Westminster (Sam Dixion and Mary Harlow); The Rocky Mountain Peace and Justice Center (LeRoy Moore); Rocky Flats Citizen's Advisory Board (Tom Marshall, Ken Korkia, Victor Holm and Robert Kanick); Ex-officio (DOE-Steve Slaten, Kaiser-Hill-Dave Shelton and John Corsi, CDPHE-Norma Morin and Edd Kray).

2.3 Selection of a Contractor(s)

The oversight panel shall oversee the refinement of the Principal Investigation and Evaluations Questions (described below in section 3.0) to be addressed by the outside contractor. The panel shall utilize the expertise of a contractor or contractors to conduct the research needed to address the Principal Investigation and Evaluation Questions and consideration of special issues (described below in section 4.0). An RFP will be issued and the panel, with the assistance of CDPHE, will select a winning proposal and negotiate a final scope of work with the winning contractor, including provisions for a peer review process.

2.4 Process Management

All meetings shall be advertised and open to the public. The general public shall be encouraged to provide input to the panel. The panel shall strive for consensus and define a process for when consensus is required and when a majority vote is required. The panel will design a public participation process and a stakeholder participation process which ensures early input from interested individuals and stakeholders. CDPHE will assist the panel in drafting the necessary documents and the RFP. In Addition to administrative and co-ordinating services, CDPHE will serve as an administrative liaison between the panel and the contractor and help disseminate information and results. DOE and Kaiser will work to ensure full access to all available data and relevant documentation. The oversight panel will not be paid.

3.0 Principal Investigation and Evaluation Questions

Described below are the specific research questions to be answered by the project. These questions will provide guidance in the development of an RFP, and serve as the basis for negotiation of a final scope of work with the winning contractor(s).

a. What are the various models which can be applied to the study of the impacts of radionuclides in Rocky Flats soils, including the RESRAD model? Analyze these models to determine which ones are applicable and best suited for the site-specific conditions unique to Rocky Flats.

b. What are the model input parameters and assumptions being applied for the existing models in use at Rocky Flats? Are these input parameters accurate and credible in simulating soil conditions and converting dose to RSAL and converting to risk? Each of these parameters should be commented upon as to distribution of possible values, from most conservative to least conservative (including a "reasonable" or "best estimate" value), and the sensitivity of these parameters to the final result.

c. By applying the best available soils model and appropriate input parameters, as well as the methodology or methodologies as defined in the RFP, how will the model results impact the translation of dose to soil action levels and the translation to risk?

d. What cleanup levels exist at other radionuclide contaminated sites and do the processes/models to determine cleanup levels have application for use at Rocky Flats.

4.0 Special Issues

Below is a list of issues for the panel and the contractor to keep in mind as the final scope of work is negotiated. This list is a compilation of concerns and working assumptions

expressed by stakeholders, DOE, Kaiser-Hill, CDPHE and EPA to provide a backdrop for the final design of the scope of work.

4.1 **Establishment of the RSAL**: Under the Rocky Flats Clean up Agreement, the RFCA principals agreed upon the current interim RSAL to establish interim soil action levels for radionuclides (primarily plutonium and americium) to be protective of people using Rocky Flats after site closure. The RSAL did not consider off-site migration. These RSAL's are to undergo periodic review as new information is available.

4.2 **Water Quality Standards**: The 0.15 pCi/L surface water standards for plutonium and americium were adopted by the Water Quality Control Commission to protect all off-site use of water both during and after closure. The RFCA principals believe that the application of the RSALs to the site will result in actinides remaining in low concentrations in the soils. Stakeholders believe that the synergy of surface/groundwater to soils should be considered in the review of input parameters in the RESRAD or other models.

4.3 **Off-site Migration**: The RESRAD model limits its review to on-site impacts. the primary scope of the research will be the review of the RESRAD model, but many stakeholders believe that the impacts of off-site migration of radionuclides is of highest concern. Therefore, the ongoing research of the Actinide Migration panel and site investigations into the short and long-term migration and fate of the actinides should be woven into the contractors activities as appropriate for addressing the Principal Questions. The Panel should co-ordinate and incorporate the Actinide Panel results into the timing of the activities of the contractor. It is expected that the contractor will meet at least once with the actinide migration investigators to share information and co-ordinate efforts as appropriate and that the oversight panel will be kept fully appraised of the activities and results of the actinide migration investigators. The contractor will be encouraged to evaluate new or improved soils models which strive to integrate multi-media considerations. some stakeholders believe that by applying ALARA principles, actinides can be minimized and immobilized in order to reduce off-site migration.

4.4 **Input Parameters**: To ensure that the contractor will quantitatively address the research questions and in order to minimize the subjective level of interpretation on how the input parameters should be applied, the scope of work and the contractor must strive to identify, at the onset, the method by which input parameters are applied or tested. Choices include: Best estimate method, conservative method, bounding method, and probabilistic risk assessment method. Specifically, stakeholders are concerned that the 651 pCi/g of Plutonium-239,240 in combination with 117 pCi/g of Americium-421 is high. Likewise, DOE is concerned that maximizing the conservatism of all input parameters could result in a model that lacks "reasonableness."

4.5 **Unique Site Specific Conditions**: The RFCA operates under the assumption that cleanup[p activities and cleanup levels will be sufficient to allow for a

predetermined future land use. For comparative purposes, review of the models should also consider the impact of a range of reasonably foreseeable land uses from industrial to residential. This assumption, as well as off-site land use developments, provide an important backdrop for the application of a preferred mode. In addition, other issue impacting soils include: community acceptance of institutional controls; the prospect for deployment of innovative/cost effective soils remediation technologies; the opportunity for off-site disposal of soils and building rubble; and, the importance of buffer zone preservation and critical habitat. All these issues, many of which are in flux, should be recognized when judging the applicability of the RESRAD or other models at Rocky Flats and the adequacy or appropriateness of the model inputs.

4.6 **Quality Assurance**: Quality assurance is critical to ensure that the contractors results are credible, believable and consistent with established practices for analysis of radionuclides. The scope of work must ensure appropriate quality assurance and peer review protocols.

5.0 Timeline:

General Timeline:	12 months from the date of contract
October to December '97	Convening of the oversight panel; refinement of scope of work and development and issuance of RFP.
January 1998	Award of Contract
March to December 1998	Contractor performs scope of work with quarterly technical review meetings with the panel and the public.
January to March 1999	Final Report (Panel review and peer review)

6.0 Estimated Cost:

$800,000 to $1,500,000 Preliminary estimates by CDPHE

City of Louisville

Office of the Mayor

August 20, 1998

Mary Harlow
Rocky Flats Soil Action Level Oversight Panel
City of Westminster
4800 92nd Avenue
Westminster, CO 80030

Dear Ms. Harlow:

I would request that the alternate representing the City of Louisville for the Rocky Flats Soil Action Levels Oversight Panel be:

Heather Balser, Assistant to the City Administrator
City of Louisville
749 Main Street
Louisville, CO 80027

Please add Heather to any distribution list as well. Thank you for making the requested changes.

Sincerely,

Tom Davidson
Mayor

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July 27, 1998

Mr. Robert G. Card, President & CEO
Kaiser-Hill Co., LLC
Rocky Flats Environmental Technology Site
PO Box 464
Golden, CO 80402-0464

Dear Mr.Card:

The Rocky Flats Soil Action Levels Oversight Panel is working diligently in its selection of the Technical Oversight Contractor. We are currently reviewing the eleven proposals received to the Request for Proposal and plan to conduct interviews of the final candidates on August 11 and 12, with contract award scheduled for September 5, 1998.

One of the clarifying questions received from several proposers dealt with the issue of their ability to work Department of Energy and contractor representatives, as follows: "Will the team have access to any former site officials and their research on radiological implications to the site?" The panel provided the following response: "It is our understanding that current DOE and Kaiser-Hill representatives will be directly available; however, RFCAB cannot commit the time of other organizations or former site, research and regulatory officials."

The Panel would appreciate your assistance in identifying a point of within Kaiser-Hill to work directly with the Technical Oversight Contractor. Please provide us with a contact name by September 5, the contract award date.

We appreciate your assistance and look forward to the task ahead. Please feel free to contact either of us if you need further information or clarification.

Sincerely,

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

cc:

Steering Committee
Robert Kanick
LeRoy Moore
Lisa Morzel

U.S. Department of Energy
Jeremy Karpatkin

Kaiser-Hill
John Coursi

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July 27, 1998

Mr. David A. Rhodes, Acting City Manager
City of Boulder
PO Box 791
Boulder, CO 80306

Dear Mr. Rhodes:

Thank you for responding to our inquiry regarding appointment of a new alternate (to replace John Tayer) for Council member Lisa Morzel on the Rocky Flats Soil Action Levels Oversight Panel by authorizing Tiana Gray to serve in that role. We look forward to working with Ms. Gray as we continue the important task ahead.

As a matter of formal record, we would appreciate your drafting a letter of authorization addressed to our attention. The letter may either be mailed or faxed to our attention, as follows: Rocky Flats Soil Action Levels Oversight Panel, c/o Advanced Integration Management Services, Inc., 5460 Ward Rd., Suite 370, Arvada, CO 80002, FAX: 303-456-0858.

We appreciate your assistance.

Sincerely,

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 466-5986

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel
(303) 430-2400 - Ext. 2174

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This is just FYI

CITY OF BOULDER

OFFICE OF THE CITY MANAGER

July 23, 1998

Ms. DeAnne Butterfield
Executive Director
Rocky Flats Local Impacts Initiative
5460 Ward Road, Suite 205
Arvada, Colorado 80002

Dear Ms. Butterfield:

This letter authorizes Tiana Gray to serve as the second alternate to Council member Lisa Morzel on the Rocky Flats Local Impacts Initiative (RFLII) Board per Boulder City Council direction. John Tayer continues to serve as the first alternate on the RFLII Board.

Tiana can be reached at:

Tiana Gray
City Manager's Office
City of Boulder
P.O. Box 791
Boulder, CO 80306
441-3010 (Phone)
441-4478 (Fax)

Please don't hesitate to contact me if you require any other information.

Sincerely,

for David A. Rhodes
Acting City Manager

cc: Radionuclide Soil Action Level Oversight Panel

June 29, 1998

Councilwoman Lisa Morzel
PO Box 791
Boulder, CO 80306

Dear Councilwoman Morzel:

The Rocky Flats Soil Action Levels Oversight Panel is approaching a critical milestone in its work: selection of the Technical Oversight Contractor, followed by a 12-month oversight of the Contractor's study. As the Panel moves through these activities, it will become even more important that all representatives are present to assure that our communities are represented in this effort.

We are concerned that you have been unable to attend on a regular basis. Although John Tayer has been designated as the City of Boulder Alternate Representative, unfortunately he been unable to attend in your absence. Tina Gray represented Mr. Tayer at the last meeting held on June 25, as an Alternate to the Alternate. The Panel's bylaws makes no provision for an Alternate to the Alternate; therefore, it is important that the primary representative make a commitment from this point on to participate more fully in regularly scheduled meetings to assure informed input to the task.

Please let us know if you plan to continue to represent the City or how you would like to proceed with this effort. We look forward to hearing from you prior to our next meeting, which is scheduled for July 23 at the Broomfield Municipal Center - Zang's Conference Room.

Sincerely,

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel

Cc:
Robert Kanick, Steering Committee
LeRoy Moore, Steering Committee

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June 29, 1998

The Honorable Tom Davidson
749 Main St.
Louisville, CO 80027

Dear Mayor Davidson:

The Rocky Flats Soil Action Levels Oversight Panel is approaching a critical milestone in its work: selection of the Technical Oversight Contractor, followed by a 12-month oversight of the Contractor's study. As the Panel moves through these activities, it will become even more important that all representatives are present to assure that our communities are represented in this effort.

We are concerned that you have been unable to attend on a regular basis. Due to the potential outcome of the study and its impact to the residents of Louisville, we believe it is important that your community be represented at scheduled meetings to assure informed input to the task. If you would like to continue to serve on the Panel we would also encourage you to appoint an Alternate to serve as your representative if you are occasionally unable to attend.

Please let us know if you plan to continue to represent the City of Louisville and the name of your appointed alternate. We look forward to hearing from you prior to our next meeting, which is scheduled for July 23 at the Broomfield Municipal Center - Zang's Conference Room.

Sincerely,

Hank Stovall, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel

Mary Harlow, Co-Chair
Steering Committee
RF Soil Action Level Oversight Panel

Cc:
Robert Kanick, Steering Committee
LeRoy Moore, Steering Committee

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CITY OF ARVADA

OFFICE OF THE CITY MANAGER
303 431-3000 PHONE ▲ 303 431-3911 FACSIMILE
TDD: 303 431-3917

December 21, 1998

Rocky Flats Radionuclide Soil Action Level Oversight Panel
c/o Mr. Ken Korkia
Rocky Flats Citizens Advisory Board
9035 Wadsworth Parkway, Suite 2250
Westminster, CO 80021

Re: Arvada Representative

Dear Rocky Flats Radionuclide Soil Action Level Oversight Panel:

Please change the alternate member of the Rocky Flats Radionuclide Soil Action Level Oversight Panel representing the City of Arvada from James McCarthy to Lydia Stinemeyer. Carol Lyons will continue to serve at the primary representative.

Ms. Stinemeyer's telephone number is 303-421-2550, ext. 3299. Her fax number is 303-431-3969.

Thank you.

Sincerely yours,

Craig G. Kocian
City Manager

CGK:rce

cc: Carol Lyons, Rocky Flats Coordinator
James McCarthy, Environmental Services/Water Quality Manager
Lydia Stinemeyer, Environmental Intern

P.O. BOX 8101 ▲ 8101 RALSTON ROAD ▲ ARVADA, COLORADO ▲ 80001-8101